FEEDSTUFFS

★ A WEEKLY NEWSPAPER ★

FOR THE FEED MANUFACTURER, JOBBER, BROKER and DEALER

Volume 31—Number 19 | MAY 9, 1959 | 1 Year $5, 2 Years $8

AFMA Announces Election of 12 Board Members

CHICAGO—Twelve leaders of the feed manufacturing industry have been elected to the board of directors of the American Feed Manufacturers Assn., according to W. T. Diamond, AFMA secretary.

Mr. Diamond announced the official results of balloting which took place during April among active members of the association in 48 states.

Seven of the twelve will serve on the AFMA board in 1959 for their first term. They are: Ward R. Flach, Eastern States Farmers Exchange, West Springfield, Mass.; John C. Hammond, O. A. Newton & Son Co., Bridgeville, Del.; Frank T. Heffelfinger II, Peavey Feed Mills, Minneapolis; James C. North, Nutrena Mills, Inc., Minneapolis; Harry Truax, Farm Bureau Milling Co., Hammond, Inc.; H. Langdon Robinson, Faultless Milling Co., Springfield, Ill.; and Allen Schreiber, Schreiber Mills, Inc., St. Joseph, Mo. The first five men are being elected to three-year terms, while Mr. Robinson and Mr. Schreiber are filling one-year vacancies incurred on the board this past year.

The remaining five directors elected will serve their second three-year term. They are: E. F. Dickey, Honeggers' & Co., Fairbury, Ill.; Herman Jensen, Golden Sun Milling Co.,

(Turn to AFMA, page 8)

Industry Asked for Contributions to Scholarship House

MANHATTAN, KANSAS — To meet a need for attracting superior students to the feed technology courses at Kansas State University, the donation of a limited number of "permanent scholarships" is being sought by a feed industry committee, of which James North, Nutrena Mills, Minneapolis, and Dean McNeal, Pillsbury Company, Minneapolis, are co-chairmen.

The unique program for these permanent scholarships has been made possible through the Oscar Straube Memorial Scholarship House for feed technology students on the Kansas State campus. The scholarship program was initiated last fall by a donation of the Straube family and other donations of friends inside and outside the feed industry.

Under the permanent scholarship plan, a few selected firms in the feed industry will be asked to furnish and equip a room in the Scholarship House, which will bear the name of the donor. The cost of preparing the various rooms will range from $1,000 to $5,000 and the gifts can be spread over a maximum of five years if desired. The total amount sought for these scholarships is $30,000.

The Scholarship House will be ade-

(Turn to SCHOLARSHIP, page 8)

Northwest Group Hears Address by AFMA Chairman

MINNEAPOLIS — Two topics of current interest to feed men—advance booking and feeding to specification—were discussed by I. S. Riggs at a meeting this week of the Northwest Feed Manufacturers Assn. in Minneapolis. Mr. Riggs is vice president of the Quaker Oats Co., Chicago, and chairman of the board of the American Feed Manufacturers Assn.

The speaker said that generally he expected industry compliance with the AFMA policy on advance booking of feed, and added that the entire industry will benefit if such policies are followed.

He advocated, for one thing, that cattle feed quality be emphasized more, in place of "guarantees against decline" in selling feed.

Mr. Riggs pointed out that manufacturers cannot buy ingredients on a "guarantee against decline," and he said there is no way they can benefit as an industry in selling feed on that basis. (AFMA policies on feed booking appeared in Feedstuffs, Feb. 29 and April 4, page 1.)

Speaking of the farmers' price-cost squeeze, Mr. Riggs suggested ways of increasing the market for meat, milk and eggs.

"My guess is that the answer lies

(Turn to NORTHWEST, page 193)

Congress' Poultry Study May Include Feed Trade

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—The recent congressional hearings on complaints by producers over price conditions in the poultry industry now appear to have touched off major attention within the House Agriculture Committee. This situation may lead to a further examination of the feed industry to ascertain its part in the economic influences which, according to committee members, are making their effects known all the way from the hatchery to the supermarket sales of broilers at 27-29¢ lb.

The appearance of a group of New Jersey poultrymen at a hearing here last week (Feedstuffs, May 2) was expected to blow up. However, it now appears that it may touch off a much deeper investigation of the poultry and turkey industries than had been expected.

The danger now is that the House Agriculture Committee, in this instance is bipartisan in its approach, and it may be persuaded to report legislation to impose federal controls over turkey hatchery production and ultimately extend similar controls over broilers.

A proposal to control egg marketing through marketing quotas is unlikely of success.

May Question Feed Men

Meanwhile, one committee member told this reporter, it appears that before this session of Congress concludes, there is likely to be a call on feed manufacturers to explain their position in the poultry-turkey industry problem.

Going back to the recent hearings —one of the first results of the hearings, according to a responsible committee member, is that the full House Agriculture Committee intends to examine a turkey industry bill which would attempt production controls on turkeys.

This measure, it is understood, would attempt production controls over hatcheries and limit distribution of hatchery stocks to some base period. This type of control apparently recommends itself to Congress since it is said to express an element of self-policing by the turkey industry and would only add the policing authority of the federal government through a type of marketing orders and agreements. The control of sales of hatchery output, the observers say, seems like an effective device since the hatchery industry is a narrow bottleneck for control purposes, making administrative problems relatively simple.

The House committee sources in-

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FEEDSTUFFS *Features This Week*

SCIENCE AND SERVICE: Progress made over the years in scientific feeding is graphically presented in a special "Science and Service" report following **page 92.** The special report is published in observance of the feed industry's Golden Year, the 50th anniversary of the American Feed Manufacturers Assn. The report brings together information on the dramatic ways in which modern scientific feeds have contributed to the increased efficiency and outstanding growth of animal agriculture. Also, it points out the contributions of the feed industry in helping to make these advances possible.

INTEGRATION: The first of two articles on economic integration in the meat industry starts on **page 18.**

SALES PROMOTION: How a milling firm's publications reach the producer with a "business approach" is described on **page 43.**

PLANT OPERATION: A new plant in Florida provides efficient, flexible manufacture of feeds. **Page 50.**

LAMBS: Early weaning of lambs is discussed by researchers in an article on **page 86.**

FEED SHOW DIRECTORY: Brief descriptions of displays at the AFMA and National Feed Show in Chicago May 10-13 appear on **page 116.**

STARTED PULLETS: A feed man discusses opportunities and risks in growing, selling and buying replacement pullets on **page 142.**

ENZYMES: The opinion that greater use of enzymes in animal feeds can be expected is expressed in a research article on **page 150.**

FEED TECH PROGRAM: Progress made and problems encountered by the feed technology program at Kansas State University are told on **page 168.**

EGG PROGRAM: A coordinated "farm-to-market" egg program is the subject of an article on **page 174.**

INGREDIENT FLOW: Flow characteristics of feed ingredients are discussed by a professional engineer on **page 182.**

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Grain Bank Gets Major Attention At Kansas Event

By THOMAS E. LETCH
Feedstuffs Staff

WICHITA, KANSAS — Economic and legal aspects of the grain bank in Kansas were brought out during the 62nd annual convention of the Kansas Grain & Feed Dealers Assn. held in the Broadview Hotel here April 30-May 2. The program included talks on grain handling, sanitation, government regulations, fertilizer recommendations and other topics. Nearly 600 registered.

David E. McKee, CGF Grain Co., Topeka, is the new president of the association, succeeding Milton L. Morrison, Morrison Grain Co., Salina. Ed Romain, the Pillsbury Co., Wichita, is the new vice president. Directors elected for a two-year term are: Robert F. Gantz, D. E. Boundurant Grain Co., Ness City; Victor S. Davis, Western Terminal Elevator Co., Hutchinson; Ellis K. Cave, Dodge City Terminal Elevator Co., Dodge City; Charles R. Coffey, Coffey Grain Co., Brewster. Holdover directors include Royal R. Cox, Cox Grain Co., Iola; S. Dean Evans, Sr., Evans Grain

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FEEDSTUFFS

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Top of the Hopper

THE INDUSTRY'S ANNUAL march on Chicago is already getting under way and, according to advance reports, movement around the corridors and through the aisles at the National Feed Show is likely to resemble close order drill. A record number of feed men—over 1,200—had preregistered 10 days before the American Feed Manufacturers Assn. convention. This figure undoubtedly has gone up, but we didn't have the heart to interrupt the AFMA staff in the midst of zero-hour preparations in order to make a check.

The convention always is great greeting time and business-doing time, and with the industry show in town again this year, there will be even more than usual of both. It can be safely predicted that most of those who attend will have no more than an opportunity to say a fast "howareyou?" to 46% of the people they intended to have a good visit with during the convention. However, success with the other 54% will probably compensate for the connections that are missed.

Two more fast predictions: A total of 620 taxiloads of upright citizens will head for dinner at sound restaurants but instead will wind up at various honky-tonks. Several dozen in the audience watching the giant-screen TV presentation of "Agriculture in Transition" will get a simultaneous itch to adjust the contrast or brightness or both.

The closed circuit show, according to all indications, should be a real achievement in dramatization of food production and marketing.

Industry leaders will be devoting some of their time at the convention to important industry-wide interests. For one, more voluntary signups for the Feed Merchandising Plan will be sought. The campaign has been going on for several weeks, and wider acceptance of the merchandising principles is urgently needed.

Commenting on the program at the Northwest Feed Manufacturers Assn. meeting this week, I. S. Riggs, AFMA chairman, said that the portion of the plan calling for an end to guarantees against price decline is more difficult to obtain agreement on than other provisions. He pointed out that the industry should not "sell contracts" but should concentrate on selling the good things the industry has to offer, such as good performance of feeds.

A second industry campaign to be discussed during the convention's off hours is the effort to secure a number of "permanent scholarships" through contributions to the Oscar Straube Memorial Scholarship House for feed tech students at Kansas State University. The committee, headed by James North of Nutrena and Dean McNeal of The Pillsbury Co., points out that furnishing a room at the residence is a more economical way to provide needed scholarship help than an annual gift. A room, once equipped, will continue to provide assistance year after year, worth about $400 a year to each student that occupies it.

♥ ♥

Reports from Washington imply something of a warning to the feed industry to be prepared for the possibility of more congressional scrutiny along the lines of the poultry investigation two years ago. It is said that the recent hearings last week (Feedstuffs, May 2) have developed broader interest in the subject among members of the House Agriculture Committee.

Also from Washington this week came a release labeled "from the office of Charlie Brown" which reports that Rep. Charles Brown (D., Mo.) wound up last week's hearing with the words, "We are witnessing the poultry panic of 1959." (Rep. Brown conducted the earlier investigations under auspices of the House Small Business Committee.)

(Turn to TOP OF THE HOPPER, page 194)

How's Business?

AN EVERY WEEK REVIEW OF FORMULA FEED BUSINESS VOLUME, INCLUDING PRICE, SUPPLY AND DEMAND TRENDS

Cautious demand for formula feeds was again noted throughout the U.S. this week. Egg prices continued to be depressed and broiler prices were weaker. Hog feeds appeared to be the only feeds moving along at the kind of pace manufacturers had expected this spring. Ingredient prices were a little weaker, and price lists for the coming week will reflect the reductions. It is thought that the falling ingredient market is one reason demand continues to lack much color. Feed grains continued relatively strong, and the feed grain index for the week was 70.2, compared with 69.1 a week earlier and 69.9 a year earlier. The index of wholesale feedstuffs prices declined 1.1 points to 85.1, compared with 86.2 a week earlier and 86.3 a year earlier. (Ingredient prices in detail on pages 190-192.)

Northwest

The feed business continued this week in its "not bad, but not so good as it should be" pattern of the past few weeks, feed mill representatives report.

Some mills are feeling the low egg prices and chick cancellations in their layer and starter feeds. Others found things about the same as a year ago. But none of the representatives found any real "zip" in demand during the week.

Field work, dropping prices and other factors were blamed for the lack of activity. Feed price lists for next week will show some further price drops.

A little more firmness in turkey prices brightened the outlook somewhat for turkey producers. They are showing some optimism for the first time this spring, and many of them believe the situation generally is much better than a year ago at this time. "They don't think they're going to make a big profit," one mill representative said, "but they feel now that the efficient producer can come out with some money."

Pig starter and grower rations are moving very well and continue to be the one bright spot. Dairy feed demand is also "surprisingly good for this time of the year" for some mills. Cattle feeds have fallen off sharply.

Southwest

"Disappointing" is the word many feed men are using to describe the formula feed business this spring. This week's pace is about the same as last week with those mills reporting a little pickup balanced off by those who have detected a slowdown.

Chick starter is at the head of the "disappointing" list. Reports continue to come in of hatcheries being unable to place chicks at a time when they usually are going at a fast pace. Farmers are looking at low egg prices of today; not what eggs might be worth in the fall. Although starter makes up a good part of the volume, it is not up to what it has been in other years. Grower feeds are moving more readily now as earlier chicks are switched from starter. Broiler feed volume is good but the price level is causing pessimism.

Swine feeds continue to be a big volume line for many mills. Turkey rations are moving better seasonally while cattle and dairy feeds are experiencing a slowing trend. Cattlemen are inclined to short stock on supplements as lush grass comes on.

Several factors are mentioned when mill sales departments try to explain the slow pace. Farmers are working in their fields planting spring crops and fertilizing, and are not too worried about their livestock. The heavy fertilizer movement is keeping many trucks tied up that would normally be moving feed into dealers' hands. And farmers and dealers are not inclined to stock up on feed with ingredient prices sliding.

Mill running time ranged from four to five days, normal shifts, this week. Backlogs are slight, with one or two exceptions. Price lists for next week are expected to be unchanged to down as much as $2.50, with $1 off about the average. Grain, millfeed, protein and dehydrated alfalfa have all shown up on the weaker side.

Northeast

The month of May started out on a very ordinary tone after a generally good April, and some in the trade fear that seasonal increases in poultry mashes will not be great enough to offset losses in dairy feeds.

Pastures are rapidly being put into shape by warm, sunny days and it won't be long until dairy feeds are "out of the window" for another season. Bran already has begun to dry up in the New England area, but so far this hasn't occurred in New York State. However, if the heat persists, dairy feeds could stage a comeback.

Egg mashes continued to carry the brunt of the feed sales tonnage. Starting and turkey feeds are coming along but not in any appreciable volume as yet. Broiler feed demand was ordinary.

Eggs continued to slide downhill. Prices of extra large white eggs in the western New York area were quoted at 37@42¢ doz.

Broiler levels in the East edged lower and ranged from a high of 17½¢ lb. to a low of 15¢ and an average price of a little under 17¢.

Dairy feed ingredients continued to weaken under the seasonal tapering of demand.

Corn advanced ½ to 1¢. Oats, barley and feed wheat held unchanged.

Tallow was firm but unchanged.

Soybean oil meal (44%) declined 50¢. Linseed oil meal dropped $3 on northwest offerings. Cottonseed oil meal and gluten meal held steady.

Fish meal declined $3 on additional catches on the East Coast. Meat scraps dropped $2.50 on lack of export demand and weakness in the West.

Brewers' grains and distillers' grains moved $2 lower. Gluten feed and alfalfa meal were unchanged. Hominy was about steady but should begin to show strength.

Country trade demand for millfeeds was pretty good but demand from mixers lagged.

Running time of formula feed manufacturers averaged about 40 hours.

Southeast

The broiler feed business is practically unchanged, and feed mills continue to report their running time as being about steady. The biggest complaint is that the price of broilers dropped this week to 14¢ lb. f.o.b. the farms or 15¢ delivered to the processing plants.

The small independent feed mills are trying their best to hold placements of broilers to a minimum. The

(Turn to MARKETS, page 196)

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USDA Official Notes Big Increase in Feed Grain Use

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — Walter C. Berger, chief of Commodity Stabilization Service, predicted at a press conference this week that the animal feeding industry this year will use about 12% more of available feed grains than it did last year.

This is considered a conservative estimate in view of the rate at which feed grains have been reported to be disappearing. Industry sources have indicated that this increase is now running at least 16½% above a year ago and that year end pileups of corn and other feed commodities will be less than had been anticipated by some prognosticators.

Mr. Berger's statement appears to be one of support for Secretary Benson's theory that lower price supports will ultimately produce greater consumption of feed grains and end products.

Mr. Berger states that high supports encourage a high capital input into production.

The huge disappearance of feed grains this year, as reported by the USDA, indicates that at the end of this crop year there will be a much lower level of corn additions to government surplus stocks, according to Mr. Berger. He said carryout at the end of this crop year will not be more than 80 million bushels of corn, despite the fact that the 1958 corn crop ran well ahead of 1957 production.

His belief that there will be a huge and more than expected disappearance of feed grains this crop year is an indication he senses a big move ahead in the free market.

Mr. Berger sees a small increase in animal slaughter, an increase in marketed meat tonnage, a decline in dairy cattle and a jump in the number of cattle on feed this coming crop year.

His thinking and USDA reports add up to the forecast that consumers probably will pay as good or better prices for pork and red meat products this coming year.

Meal Market

The feed economy will be affected in considerable measure by Public Law 480 export authorizations for edible oils, which are expected to be large. (Also see story on this page.) These procurements may run up the current market, particularly the sensitive cottonseed oil market. High cotton oil prices are sure to attract soybean oil sales.

It all adds up to an equation that there will probably be a stable soybean oil meal market for the balance of this year, despite the fact that feed grain consumption is running along at a record rate. The disappearance of grains is greater than the increase in animal numbers.

This assertion is now expected to be confirmed by an economic survey of the American Feed Manufacturers Assn.

The feed industry is moving into a great period of influence in food pricing.

The industry is now seen as a latent factor which is under critical observation of political beavers in Washington. (See page 1 story on the poultry industry.) The industry has a big bank account on which it can draw any day.

Honeggers' Announces Quarterly Sales Boost

FAIRBURY, ILL. — Sales for the third quarter of the current fiscal year for Honeggers' & Co., Inc., Fairbury, showed an increase of 49% over the same quarter last year, it was announced at a recent board of directors meeting.

Dollar volume for the full nine months amounted to $12,340,000, compared with $8,699,000 for the like preceding period.

A quarterly stock dividend of 1.5% was declared payable May 15 to shareholders of record on April 30.

E. F. Dickey, president of Honeggers', estimated that sales for the current fiscal year will exceed $18 million, and that profits for the last quarter will raise the year's total well above the profit figure for the full preceding year.

Construction of a new 1.5 million-bushel terminal elevator which will expand the company's recently activated grain merchandising department was approved by the board. The new grain facility will be located adjacent to Honeggers' Fairbury mill, and will also substantially increase feed production output, according to Mr. Dickey.

Another million-bushel grain handling facility is operated in connection with the company's Lincoln, Neb., feed mill.

TO BUILD NEW ELEVATOR

MASON CITY, IOWA—A permit for the construction of a 350,000-bu. grain elevator has been issued here to the North Iowa Cooperative Processing Assn.

Dr. William E. McDaniel — Howard N. Stark — Irving M. Lintner

EASTERN FEDERATION CONVENTION PANEL—A feature of the convention program of the Eastern Federation of Feed Merchants June 8-9 at Pocono Manor (Pa.) Inn will be a panel symposium covering a range of vital feed industry subjects. Panelists are Dr. William E. McDaniel, head of the department of agricultural economics, University of Delaware, Newark, who will cover "Regional Competition in Poultry Products" and "What's to be Done to Preserve Northeastern Markets for Producers in this Region"; Howard N. Stark, Limestone Products Corp. of America, Newton, N.J., whose subject is "Dealer Merchandising Improvements," and Irving M. Lintner, Sunrise Milling Co., Somerville, N.J., who will speak on "Feed Men-Veterinarian Relationships" and "Poultry Product Promotion by Feed Tax."

KEYNOTER TO DISCUSS MANAGEMENT

CHICAGO—John M. Fox, president, Minute Maid Corp., Orlando, Fla., will give the keynote address of the American Feed Manufacturers Assn. convention here. He will discuss "What It Takes to Be a Manager" as the final speaker of the May 12 morning session. He is also expected to describe Minute Maid's activities in the cattle feed industry. The firm manufactures citrus pulp.

Consolidated Blenders Names Vice President

FREMONT, NEB.—K. L. Morrison, president of Consolidated Blenders, Inc., Fremont, has announced the addition to the company staff of Warren C. Wells, who will join the firm in July as vice president and general manager.

Warren C. Wells

The post is newly created, Mr. Morrison said, and is the result of increased business activities of the company.

Mr. Wells will terminate 18 years with the Raiston Purina Co. on July 1. He is currently manager of Purina's Harrisburg, Pa., plant. He will move with his family to Omaha, where they resided for 11 years before going to Harrisburg in 1957. He had been assistant plant manager and then plant manager at the Purina Omaha plant.

In addition to his regular duties with the dehydrated alfalfa processing and marketing firm, Mr. Wells will also direct the activities of Consolidated Barge Co. which moves grain and dehydrated alfalfa products between the Nebraska City, Neb., and Guntersville, Ala., plants of Consolidated Blenders and also serves other river points.

Dr. Ralph Soule Named GTA Nutrition Director

ST. PAUL, MINN.—The Farmers Union Grain Terminal Assn., St. Paul, has announced the appointment of Dr. Ralph P. Soule, Jr., as director of nutrition for the GTA feed division.

Dr. R. P. Soule, Jr.

Dr. Soule formerly was a nutritionist with the Chas. Pfizer & Co., Inc., agricultural research and development division, Terre Haute, Ind. He will assume his new duties June 1.

As director, he will be in charge of research testing, formulating, service and quality control operations of GTA feed division in Minnesota, North and South Dakota and Montana, the announcement said. He has been in charge of large animal development research at the Pfizer research farm.

Dr. Soule received his Bachelor of Science degree in animal husbandry at Michigan State University, East Lansing, and his Ph. D. in animal nutrition at Kansas State University, Manhattan. While at Kansas State, he was assistant professor of animal husbandry.

He is the author of several scientific publications dealing with large animal and swine nutrition.

CO-OP BUYS FEED MILL

ALDEN, MINN. — Farmers and businessmen here have formed the Cooperative Elevator Co. to operate the former Morin Mills Co. properties.

Oil Exports to Be Stabilizing Factor In Meal Markets

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—Pending huge export authorizations of edible oils from the U.S. this year may only be construed as a great market stabilizing factor for the feed industry.

The oil export authorizations will include 100,000 tons for the Argentine, 100,000 tons to Turkey and an already announced authorization by the International Cooperation Administration of 27,000 tons to Italy.

These export authorizations — the major part of which is still to be announced formally—should provide a big backbone to the oilseed crushing industry, which has been operating under a record breaking crush for the current crop year.

The nation has been chewing up the biggest disappearance of feed grain crops, but at the same time this record disappearance of feed grains has been accompanied by a record-making crush of oilseed crops this year.

Oil export authorizations can be no less than a stabilizing factor in the oilseed meal market this year.

Will Firm Oil Market

The imminent heavy procurement authorization of edible oils may be price firming in the edible oil markets, or volatile if the foreign buying should concentrate on nearby procurement.

Responsible officials told this reporter that Turkey will lift, before the end of this U.S. oil crop year, three fourths of its total. USDA officials are unwilling to comment on Argentine lifting of U.S. oils at this time but, it is noted that the Argentine is heavily short of even domestic requirements for new crop oil and that it has more than adequate storage facilities. Consequently, it is reasonable to assume that they may take all available stocks of edible fats from the U.S. at this present price time.

USDA officials notified this reporter this week that the Bunge Corp. had taken all the available cottonoil stocks of Commodity Credit Corp.—amounting to approximately 38 million pounds, at 13.32¢ lb. for unrestricted use.

The big purchase of the USDA surplus cottonseed oil by the Bunge company may mean that it has taken over the U.S. surplus—in anticipation of and confirming the Feedstuffs report

(Turn to MEAL MARKETS, page 193)

Panhandle Feed, Grain Group Elects Officers

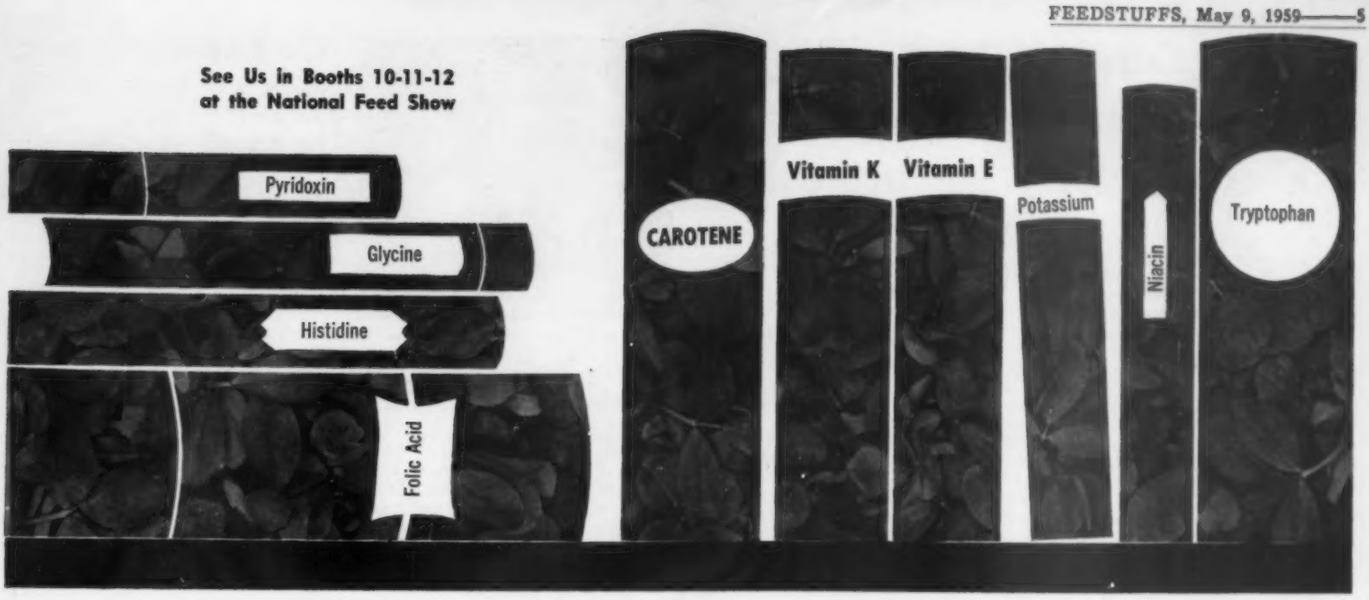
AMARILLO, TEXAS—The following officers have been elected by the Panhandle Grain & Feed Dealers Assn.: D. C. McWhorter, Black (Texas) Grain Co., president; Don Riffe, Stratford (Texas) Grain Co., vice president, and C. W. Fletcher, Continental Grain, Amarillo, secretary-treasurer.

The association has elected the following directors: Cone Donaldson, Kerrick (Texas) Elevator Co.; Walter Fraser, Walter K. Fraser Elevator Co., Groom, Texas; Fred T. Dines, Western Grain & Supply Co., Amarillo; Russell Daly, Cargill, Inc., Plainview, Texas, and Conway Kuykendall, Randall Co. Grain & Supply, Happy, Texas.

The officers and directors were elected at the group's convention.

MANEY BROS.
MILL & ELEV. CO.
Minneapolis, Minnesota
Distributors in the Upper Midwest States for
SMALL'S DEHYDRATED ALFALFA MEAL

See Us in Booths 10-11-12
at the National Feed Show

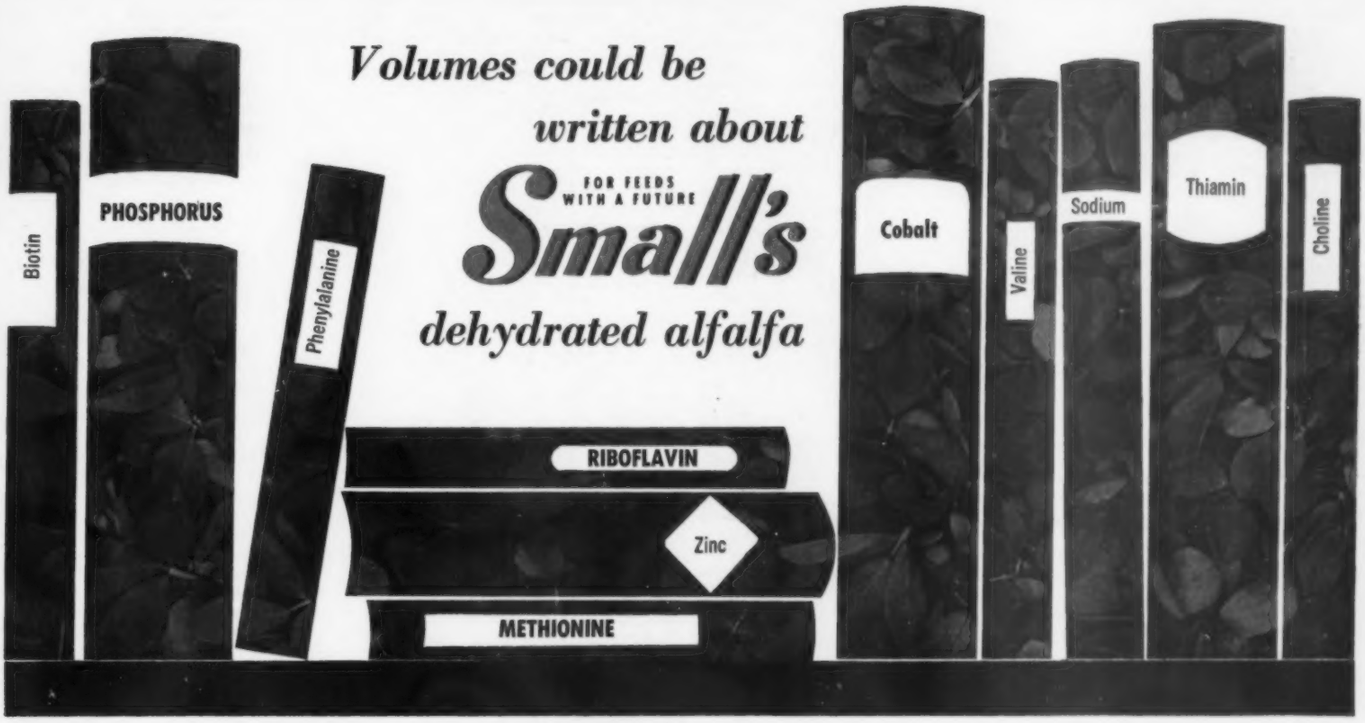


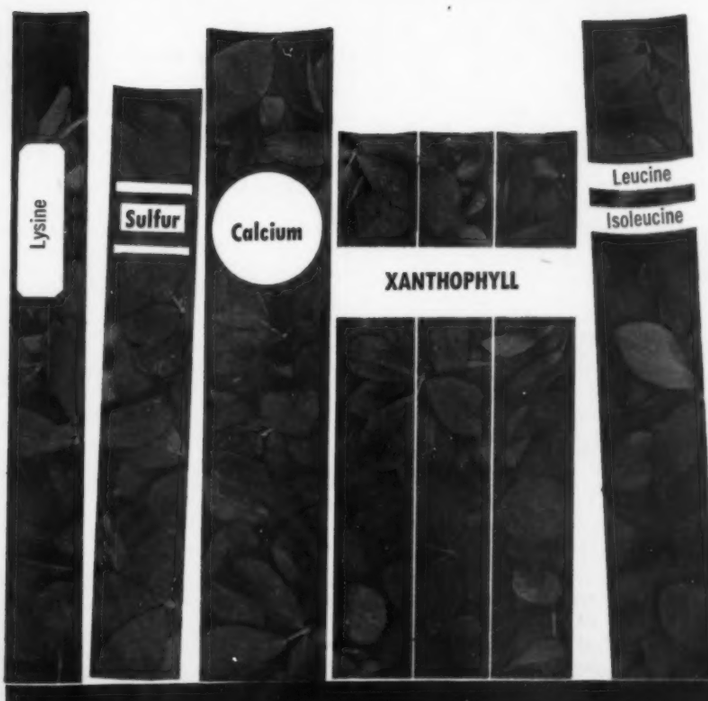
Volumes could be written about

FOR FEEDS WITH A FUTURE

Small's

dehydrated alfalfa



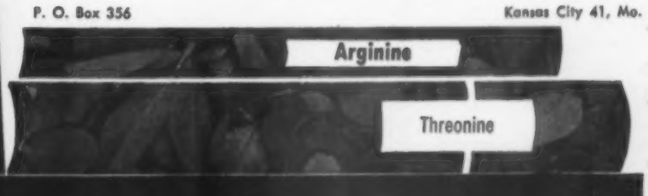


Volumes could be written—and have been written—about the amazing number of important nutritional elements present in the best grade of dehydrated alfalfa. Even a superficial study reveals that these numerous essential elements would be prohibitively costly if bought individually.

When you specify Small's Dehydrated Alfalfa, you get *all* these extra values in full measure, for A-D-M goes to extra expense and pains to insure that the product delivered to your door contains all the basic nutritional values of alfalfa in the field. May we tell you in more detail why Small's Dehydrated Alfalfa belongs in *your* feed? . . . and why it continues to be the first choice of value-conscious feed manufacturers everywhere?

ARCHER-DANIELS-MIDLAND COMPANY
ALFALFA DIVISION

P. O. Box 356 Kansas City 41, Mo.



Golden Year Feature

Partnership of Science, Feed Industry Reported

A special report on how formula feeds help agriculture benefit from research is included as part of this issue of Feedstuffs, following page 92.

This 16-page section, entitled "Science and Service," is published in observance of the feed industry's Golden Year, the 50th anniversary of the founding of the American Feed Manufacturers Assn.

Science and Service is a summation of a series of articles under the Golden Year label which appeared in Feedstuffs over the past year. Authors of the articles include a number of college and industry authorities (listed on page 3 of the section).

In adapting the Golden Year series for "Science and Service," an attempt was made to present the basic data from the articles in a manner that would make the booklet suitable for distribution among feeders, educators, businessmen and others who would benefit from learning more about progress in animal agriculture and the feed industry.

Reprints Available

A limited number of reprints of Science and Service are available now at a single copy price of 50¢. Larger numbers will be made available at quantity prices, ranging downward from 35¢ each for 10 to 100, 25¢ each for 100, to 10¢ each for 1,000.

Provision may be made for imprinting a company signature on the bottom of the last page of the booklet, substituting for the descriptive information appearing in the copy included with this issue.

Quantity orders may be submitted up to June 15. Requests for reprints may be directed to Reader Service Dept., Feedstuffs, Box 67, Minneapolis 40, Minn.

Western Condensing Names Sales Director

APPLETON, WIS. — Charles F. Martin, sales manager for the feed products division of Western Condensing Co., Appleton, has been appointed director of sales for the firm, Kenneth W. Ward, president, has announced.

Charles F. Martin

Mr. Martin succeeds Douglass L. Mann, who was advanced to sales manager of the grocery and manufactured products division of the parent firm, Foremost Dairies, San Francisco.

In his new capacity, Mr. Martin assumes complete sales responsibility for Western's entire line of consumer and commodity products sold to the food, pharmaceutical and agricultural industries.

After joining Western in 1955, Mr. Martin was promoted to the position of sales manager of the feed products division in 1957. Before associating with Western, he worked extensively in sales. He is a graduate of the National Agricultural College, Farm School, Pa., with a bachelor's degree in agronomy.

Mr. Mann, formerly director of sales and assistant division manager of Western Condensing, is a graduate of Stanford University. He was for a time general sales manager of Congoleum Nairn in New Jersey and has been with Foremost since 1954.

C. D. Roberts Heads Indianapolis Feed Club

INDIANAPOLIS—C. D. Roberts, Cargill, Inc., Indianapolis, was elected president of the Indianapolis Grain & Feed Club at the annual meeting held here recently.

Other officers named were Charles Hutton, Master Feed & Seed Co., vice president, and J. G. Steinhart, Jr., secretary-treasurer.

Distributor Named

NEWARK, N.J.—Nopco Chemical Co., Newark, has announced the appointment of the W. P. Mann Sales Co., Omaha, Neb., as distributor of its agricultural products in Iowa and Nebraska. In this capacity, the Mann organization will carry the complete line of Nopco's nutritional additives for the fortification of livestock and poultry feed.

Official of Kansas Feed Firm Resigns

ATCHISON, KANSAS—C. H. (Jack) Blanke, Jr., has resigned as secretary and a director of the Blair Mill & Elevator Co., Atchison, effective May 15. Mr. Blanke has not announced his future plans.

A former student of Kansas State University where he was a quarterback on the football team, Mr. Blanke joined the Blair firm in 1939 and has been associated with the company ever since, except for wartime service in the air force from 1941 to 1946. He was sales manager of the firm. He is the son of Clarence H. Blanke, Sr., who is vice president of the company.

Prominent in industry association activities, Mr. Blanke is currently secretary of the Midwest Feed Manufacturers Assn. He served as treasurer last year. He also has been active in the Kansas Formula Feed Manufacturers Assn. and is a member of the Feed Technology School Advisory Committee, acting as temporary chairman since the resignation of David H. McVey.

Cincinnati Feed Club Elects New Officers

CINCINNATI—Seventy-five members and guests of the Cincinnati Feed Club attended the annual election of officers May 4 at the Glen Rendezvous supper club in nearby Newport, Ky.

Ray Fledderman, Archer-Daniels-Midland Co., was elected chairman. He was unopposed. Other officers are Charles Fedders, J. H. Fedders, Inc., co-chairman; Fred Emmert, F. L. Emmert Co., secretary-treasurer, and Aubrey Eaton, Victor Transit Corp., and Roland C. Lindsey, Riverside Terminal Co., directors.

Installation of the new officers will be held at the annual golf party of the club June 11 at Summit Hills Country Club in nearby Kentucky.

Plant Production Head Appointed by Eshelman

LANCASTER, PA. — Charles G. Ellis, Cartersville, Ga., has joined John W. Eshelman & Sons, Lancaster, as production manager at its Chamblee, Ga., plant.

Mr. Ellis is a graduate of Purdue University where he received a degree in biochemistry. Before joining Eshelman he was employed by feed manufacturers in Indiana and Georgia. He is vice president of the Georgia Feed Assn.

N. D. Baker M. G. Purpus

Black, Sivalls & Bryson Names Vice Presidents

KANSAS CITY—The election of two new vice presidents of Black, Sivalls & Bryson, Inc., Kansas City, manufacturer of steel products including bulk bins, has been announced by Kenneth W. Lineberry, president.

Newton D. Baker has been elected to the newly-created post of marketing vice president, and M. G. Purpus has been elected vice president and manager of steel product sales.

Mr. Baker will participate in the review and analysis of marketing operations of all divisions and will assist division sales managers with sales training and sales planning. He will also continue his responsibility for all advertising, sales promotion and public relations activities and will serve in a staff capacity on employee relations. Mr. Baker joined the firm in 1950.

Mr. Purpus joined the company in 1951, and shortly became sales manager of the steel products division. He was later elected vice president of BS&B International. As sales manager for steel products, Mr. Purpus supervises the activities of distributor and dealer organizations in the sale of grain and bulk feed bins and tanks, propane systems and steel buildings.

Nopco Names Director Of Applied Research

NEWARK, N.J. — Nopco Chemical Co., Newark, has announced the appointment of Dr. Harold Yacowitz as director of applied research, fine chemicals division. He will be responsible to Dr. M. Hochberg, vice president in charge of the division, in the supervision of the activities of product development, biological research and technical service laboratories, as well as those of the technical service bureau.

Dr. H. Yacowitz

A graduate of Cornell University, Ithaca, N.Y., Dr. Yacowitz holds a bachelor's degree in nutrition and dairy science, and he also holds M.N.S. and Ph.D. degrees for his post graduate work in nutrition at Cornell.

Before joining Nopco, he was with the Squibb Institute for Medical Research, and prior to that was on the poultry science department staff at Ohio State University.

Dr. Yacowitz is a member of the American Chemical Society, the Animal Nutrition Research Council and the American Institute of Nutrition. He is also a member of the Poultry Science Assn., the Society of Animal Production and Sigma Xi. He has had more than 35 scientific works published.

Nopco's fine chemical division produces vitamins, amino acids, antibiotics and growth stimulants for the feed and other industries.

SCORES AN ACE

KANSAS CITY—Loyd O. Selders, the Pillsbury Co., jobbing division, Kansas City, scored a hole-in-one in a recent golf game at Indian Hills Country Club here.

Cyanamid Announces Open Use of Patent On Low-Calcium Diet

NEW YORK, N.Y.—American Cyanamid Co. announces that it has granted blanket permission to the feed industry to use its patent on a low calcium poultry diet which, according to company officials, increases the effectiveness of the tetracycline antibiotics against CRD, synovitis and other diseases.

In a letter to the industry, the company stated that "since feed manufacturers are now showing interest in such use of low calcium formulas to increase antibiotic activity, and may be planning developmental work along these lines, Cyanamid is making this announcement regarding the dedication of U.S. Pat. No. 2,806,789 in order to remove any concern any feed manufacturer may have regarding possible patent infringement or the need to obtain royalty-bearing license rights to practice the inventions of said patent."

Results of Cyanamid studies have been submitted to the Food & Drug Administration for its consideration and clearance.

"The Cyanamid patent," the company said, "was obtained following studies by company investigators which showed that certain elements in poultry rations, notably the calcium salts, interfered with the absorption into the blood and tissue of Aureomycin chlortetracycline and other tetracycline antibiotics.

"The studies further showed that when the calcium content of the feed was reduced from the normal 2 or 3% to less than 1%, the absorption of Aureomycin into the blood stream increased as much as 400%, thus making the antibiotic more effective against disease."

Cyanamid noted that low calcium feeds are impractical for prolonged use with poultry. However, company officials pointed out that the feed industry recently has shown increasing interest in the use of low calcium formulas for a few days to increase the effectiveness of antibiotics.

"When antibiotics are used at higher levels for only the few days' period required for therapeutic purposes, the enhancement of the therapeutic effect with low calcium rations can be highly practical and of great economic value," the letter stated.

Sugar New Commodity Line for Cargill, Inc.

MINNEAPOLIS — Addition of a new commodity line—sugar for use in livestock feeds — was announced here recently by H. Robert Diercks, vice president, Cargill, Inc.

Mr. Diercks said Cargill will merchandise the sugar—exempt from import taxes and bonded for use only as a feed ingredient—through the company's 55 grain trading offices under direction of J. Y. Edwards, molasses merchandising manager headquartered here. Initial warehousing and distribution will be out of Baton Rouge, La.; Baltimore, Md., and Port Cargill, Minn.

Mr. Diercks said the new operation is an outgrowth of increased sugar usage by the feed industry, up to 33,000 tons in 1958 as compared to only 9,000 tons in 1954.

Sugar is used primarily to increase palatability of pig and calf starter feeds and is a source of carbohydrates, he pointed out.

Madison Clement Wins

WACO, TEXAS—Madison Clement, manager of the Clement Grain Co., Waco, feed and grain firm, was elected mayor of Waco at the recent municipal election. Mr. Clement is current president of the Grain & Feed Dealers National Assn., serving his second term.

Grain, Rail Officials Discuss Proposed Changes in Rates

CHICAGO—Another step was taken here April 30 by railroad lines to recapture a substantial portion of the revenue business lost to truckers, especially that portion concerned with the movement of grain and grain products from point of origin to point of destination.

Approximately 50 representatives of the grain and allied industries from all parts of the Midwest, the Northwest and the Southwest met at the Chicago Board of Trade Building here preliminary to a full dress public hearing scheduled May 12. Also present were railroad representatives of the Soo Line, the Burlington, the Northwestern and the Milwaukee Road.

It was hoped, too, that the meeting would clarify some of the vague phraseology appearing in the Western Trunk Line Application. R. E. Hibbard of the special Northern Lines Committee appeared as spokesman to explain the apparent intent of the application and, so far as possible, to explain its uncertainties. Serving as chairman and secretary, respectively, were Walter R. Scott, executive vice president, Kansas City Board of Trade, and J. S. Chartrand, manager, Chicago Board of Trade Transportation Department.

Broad Viewpoint

In discussing the matter from a broad, over-all viewpoint, Mr. Hibbard stated, in review, that the subject matter is a proposal of the Northern Grain Committee to meet truck competition throughout Western Trunk Line territory.

Admittedly an innovation so far as railroad rate-making is concerned, the statement was made that "the railroads were convinced the country elevator level is the best place to start creating an incentive for a swing back to boxcars instead of truck bodies." The hope was expressed that such an approach would prove acceptable to the grain and allied trades at the public hearing May 12.

The Northern Grain Committee has given consideration to a number of different plans or programs and finally decided to submit the one now known as application No. E-21-5269 to the shipping public for examination and determination as to feasibility. It was pointed out in this

(Turn to RAIL RATES, page 194)

Midwest Association Given Award by U.S. Chamber of Commerce

KANSAS CITY — The Midwest Feed Manufacturers Assn., Kansas City, received a special award from the Chamber of Commerce of the U.S. during the chamber's annual meeting held recently in Washington. (Feedstuffs, May 2.)

The award was presented to Ray Ammon, immediate past president of Midwest, and director of the feed division, Quaker Oats Co., St. Joseph, Mo., for "Initiating and carrying out a program to bring to practicing veterinarians the latest scientific findings in the field of animal and poultry nutrition research with the aim of improving and increasing the nation's food supply." Arch Booth, executive vice president of the U.S. Chamber, presented the award in the form of a silver plaque.

The presentation took place at the annual Leadership Recognition Dinner, and it was one of only five awards given for association achievement in the public interest. It is the first time that an association such as the MFMA has been honored, officials said.

According to Lloyd Larson, executive vice president of the association, who was also on hand for the award presentation, the veterinarians of Kansas and Missouri, the Kansas Veterinary Medical Assn. and the Missouri Veterinary Medical Assn. helped make possible the award through their cooperation and participation in the first Midwest Veterinary-Nutrition Conference held in Kansas City last December.

Increase in Earnings

CHICAGO—International Minerals & Chemical Corp., Skokie, Ill., reported net earnings of $2,045,000 for the third fiscal quarter ended March 31, 1959, equivalent to 83¢ per share on the 2,343,327 common shares outstanding, compared with $882,000, or 33¢ per share for the corresponding period a year ago.

Sales for the quarter just ended were $30,722,000, up 15% over the $26,682,000 for the third quarter a year ago.

Earnings before taxes were $2,676,000 for the third quarter this year, compared with $1,192,000 a year ago. For the nine months ended March 31, 1959, earnings before taxes were $3,664,000, compared with $3,405,000 a year ago.

Committee for Midwest Conference Announced

KANSAS CITY—Dr. W. E. Poley, director of nutrition for Zip Feed Mills, Sioux Falls, S.D., has been appointed chairman for the Midwest Veterinary Nutrition Conference to be held Nov. 30 and Dec. 1 at the President Hotel here.

Dr. W. E. Poley

The announcement of Dr. Poley's selection and the appointment of other committee members was made recently by the Midwest Feed Manufacturers Assn., Kansas City, sponsor of the event. State veterinary medical associations are cooperating with MFMA in sponsoring the annual gathering.

Other committee members named are Maurice Wells, Waterloo (Iowa) Mills; Dr. Chase Wilson, Consumers Cooperative Assn., Kansas City; Dr. R. E. Lubbenhausen, Ralston Purina Co., St. Louis; Dr. John D. Shoeman, Walnut Grove Products Co., Atlantic, Iowa; Dr. Cloy B. Knodt, Cargill-Nutrena experimental farm, Elk River, Minn., and Dr. C. M. Cooper, veterinarian, Kansas City. The committee is scheduled to meet at the President Hotel June 2.

The conference will be the second annual meeting sponsored by MFMA. MFMA received a national recognition award for "Distinguished Achievement" from the U.S. Chamber of Commerce recently for its efforts in promoting greater understanding and cooperation between veterinarians and feed manufacturers.

Consumers Co-op Plans New Mill

KANSAS CITY — The Consumers Cooperative Assn., Kansas City, has selected a site near Muncie, Kansas, just west of Kansas City, for a new $400,000 feed mill, Howard Cowden, president of the organization, has announced. Construction will start in June on a 10-acre tract purchased from the Union Pacific Railroad. The mill is expected to be completed early next year.

The mill will serve about 80 cooperative organizations in eastern Kansas and western Missouri. CCA operates other feed mills at Ida Grove, Iowa, and Enid, Okla. The Ida Grove mill was completed last year. Another mill is being planned on a site yet to be selected in eastern Nebraska.

The Muncie buildings will be of steel and masonry construction and will include a warehouse, office and laboratory.

North Carolina Feed Tonnage Boost Listed

RALEIGH, N.C. — Feed tonnage sold in North Carolina during the first three quarters of the 1958-59 fiscal year shows the year to be ahead of the same period in 1957-58 by 18%, according to a report released recently by the North Carolina Department of Agriculture.

Total tonnage for the first nine months was 1,161,488, the report shows. This was 174,179 tons more than during the same period a year earlier.

Every month of the period has shown an increase over the same period a year earlier. March tonnage was 138,907, compared with 117,107 during March, 1958.

Want to **"toot your sales horn"** for a capacity crowd of buyers?

Then plan now to advertise in Feedstuffs 1960 AFMA Issue. Just like the issue you're now reading, it will have bonus distribution to all convention registrants. Exact date of next year's meeting hasn't been announced but if you'd like further details, just call the nearest Feedstuffs office: New York, Chicago, Kansas City or Minneapolis. Better yet, if you're attending this year's meeting, visit Feedstuffs hospitality room at the Hilton.

Fruen's Minneapolis, Minn.

ACE BRAND ROLLED OATS
(Steam Processed)

if you want good, clean rolled oats at a competitive price

Send for samples and prices today
Mixed cars shipped at straight car prices
Our Teletype number is MP 477

TOWER BRAND ROLLED OATS (Steam processed)
ACE BRAND ROLLED OATS (Steam processed)
KING BRAND ROLLED OATS (Steam processed)
WHOLE OAT GROATS
STEEL CUT OAT GROATS
BOLTED OAT FLOUR
GLENWOOD FEEDING OAT MEAL
FALCON BRAND PULVERIZED WHITE OATS
STANDARD BRAND PULVERIZED WHITE OATS
DAIRY BRAND COARSE GROUND OATS
CRESCENT BRAND PULVERIZED OATS
CORN OATS PELLETS (Corn-Oats)
MIXERS' PULVERIZED OATS
MIXERS' COARSE GROUND WHITE OATS
MIXERS' PELLETED OATS
APEX BRAND CRIMPED WHITE OATS
OAT FEED
STEAM ROLLED WHOLE BARLEY
GROUND BARLEY
PEARLED BARLEY FLAKES (Max. 2½% fiber) (steamed processed)
GLENWOOD PEARLED BARLEY
STAR CRACKED PEARLED BARLEY
STEEL CUT WHEAT
ACME GROUND DOMESTIC FLAX SCREENINGS

Millers TO THE FEED TRADE

FRUEN MILLING COMPANY
MINNEAPOLIS 5, MINNESOTA

TYPICAL STUDENT ROOM—A permanent scholarship program was initiated last fall in connection with the Oscar Straube Memorial Scholarship House for feed technology students on the Kansas State campus. Shown here is one of the student rooms which firms in the feed industry will be asked to furnish and equip. Each room will have a plaque at its door showing the name of the donor.

SCHOLARSHIP

(Continued from page 1)

quate for about 50 men majoring in feed technology. They will be selected from the top 5-10% of their high school classes and will be students who require financial help to attend college, the committee chairmen said. Savings to the students made possible by free rent and operation of the building themselves, will amount to about $400 a year. This is equivalent to the average yearly scholarship donation to Kansas State.

James A. McCain, president, Kansas State University, recently pointed out in an address that competition among industries for better college graduates is increasing every year, and many industries, notably in engineering and electronics, are making unusual efforts to channel students in their direction. The permanent scholarship program will be a valuable help to the feed industry in a similar way, according to Dr. McCain.

James North

Dean McNeal

Other advantages of the permanent scholarship program are:

1. It is a more economical way to provide scholarship help than an annual gift. For example, $30,000 raised this way will provide the equivalent of $400 annually for 50 students every year. Thus, this one $30,000 fund will do the same job that would otherwise require $20,000 every year.

2. It will provide a strong nucleus of top quality students for the feed technology courses, since this group will be chosen from the better high school graduates.

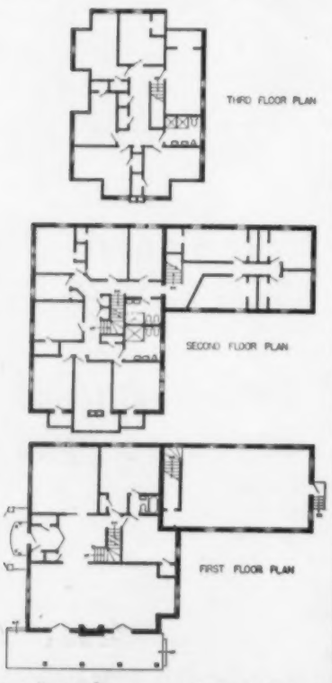
3. The fact that many feed technology students will be able to live together in the Scholarship House will help build an atmosphere which will deepen interest in the feed school work and bind the group together. It will also provide a focal point for feed industry visitors to the campus where they may become better acquainted with students.

Name of Donor on Plaque

A floor plan of the Scholarship House accompanies this story. Each room will display at the door a plaque stating the name of the donor.

Mr. North, chairman of the funds solicitation group, said he expects that the limited number of rooms, about 20 of them, will quickly be taken up.

"This is a unique and effective way," Mr. North said, "for any company to help the feed industry and at the same time earn the lasting gratitude of a large number of deserving students for years to come. Many of these men are likely to become the next generation of industry leaders. There is no better investment than one made in the youth of the nation and in the future of your own industry."



FLOOR PLANS — These drawings show the room arrangement on the first, second and third floors of the Oscar Straube Memorial Scholarship House at Kansas State University. The house also has a basement. Under a permanent scholarship plan to attract students to Kansas State's feed technology courses, firms in the feed industry will be asked for donations of $1,000 to $5,000 to furnish and equip a room.

WANT FEED MILL

BRECKENRIDGE, TEXAS—Farmers in the Breckenridge area are interested in establishing a co-op grain elevator, but want a feed mill with it, a recent survey of Stephens County indicated.

Symposium Expected to Help U.S. Agriculture and Trade

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — Counterpart funds earned through exports of U.S. surplus agricultural commodities went to work this week in a big way when the Foreign Agricultural Service of the U.S. Department of Agriculture opened an international feed symposium attended by more than two score foreign feed industry representatives who were guests of USDA and were in the audience for talks by a top flight group of U.S. feed industry officials and scientists.

The symposium was designed to encourage greater use of U.S. feedstuffs in Europe, and it was one of the more constructive aspects of the Foreign Agricultural Service in its efforts to build foreign markets for U.S. farm products. Also, the symposium served as a good promotion for the U.S. feed industry.

After the three day session here, the visitors planned to move on to college, government and private research farms and laboratories and to the American Feed Manufacturers Assn. convention in Chicago.

The symposium was jointly sponsored by USDA and the Soybean Council of America.

Constructive Activity

Everybody here concedes that this symposium is the most constructive FAS activity, partly financed by funds derived from sale of agricultural surpluses under Public Law 480.

It's doing a dual-purpose job: Promoting exports of U.S. agricultural surplus grains and oilseed crops and telling foreign markets about the adequate use of these surplus grains and oilseed crops, which, in the long run, make available to them the end products of swine, poultry and cattle at a lower cost than they now must pay in their open markets.

This foreign visitation may be seen by many as a passing fancy, but others are unwilling to accept such a cynical view and say that here is the big chance for the U.S. feed industry to drive home to these foreign feed industry folks the advantages of using our methods and techniques, which have been a revelation to even domestic producers of poultry, swine and cattle in recent years.

There is some talk that this promotion may reflect a defeat of promotion plans for the export of end products such as eviscerated poultry and turkeys to western Europe. But others say this is hardly the case. FAS officials agree that sustained exports of those end products of poultry are not likely to be maintained over long periods of time. They say that these exports are exhaust valve exports which could take the market heat off the domestic situation.

Contributes to Common Good

But, in the long run, the feed industry is again contributing to the common good of U.S. farmers as it creates markets for our grain and oilseed surpluses in foreign manufacturing plants where the efficient feeds will do for overseas producers the same thing they are doing at home.

The feed industry has in the recent past eased the pressure of an expanded farm economy under rigid high price supports through its capacity to convert grain supplies into pounds of lower cost meats at super market counters.

It isn't too much to think that the broad representation of foreign feed industry officials present this year at

(Turn to SYMPOSIUM, page 189)

AFMA

(Continued from page 1)

Estherville, Iowa; Dean McNeal, the Pillsbury Co., Minneapolis; I. S. Riggs, the Quaker Oats Co., Chicago, and L. F. Van Stone, Uncle Johnny Mills, Houston, Texas.

Mr. Flach is director of production for Eastern States. He has been with the firm 29 years, and had formerly served as a chemist, laboratory director in charge of quality control, and manager of an Ohio mill.

Dr. Hammond is vice president and treasurer of O. A. Newton & Son Co. He has been with the firm 15 years and was formerly director of research. He is past chairman of the AFMA Nutrition Council. Prior to his work with Newton, he was a nutrition research scientist for the U.S. Department of Agriculture.

Mr. Heffelfinger is vice president and general manager of Peavey Feed Mills. He has been with the company 13 years and formerly served as superintendent of Peavey's retail stores.

Mr. North has served as president of Nutrena since 1954. He joined Nutrena in 1935. For the next decade, he was transferred to several different locations and advanced steadily. In 1945 he was named executive vice president.

Harry Truax, manager of the feed and poultry departments of the Indiana Farm Bureau Cooperative Assn., Inc., has been with the organization for 25 years. Prior to his present position, he was a fieldman. Mr. Truax served two previous terms on the AFMA board of directors and is a past vice chairman. In addition, he is president of the Farm Bureau Milling Co., Hammond, Ind.

Mr. Robinson, president and general manager of Faultless Milling Co., has served in this capacity for the past ten years. His previous business affiliation was with Henson Robinson Co., where he served as vice president.

Mr. Schreiber is president of Schreiber Mills. He has been with the company 19 years and was formerly in maintenance, production and sales work. He has been active in regional and state feed association work.

J. W. Withers Heads Memphis Feed Club

MEMPHIS, TENN. — J. Wellford Withers of Overly & Withers has been elected president of the Memphis Feed & Grain Club for 1959, succeeding Bruce Ballew of the Farmers Mill & Elevator Co. at Collierville, Tenn.

Elected vice president was Ray Murphy, Nutrena Mills, Inc.; George Pehlman, the Pillsbury Co., was named secretary, and Barry Griffin. C. G. Carter, broker, treasurer.

Directors named were J. S. Harpster, Standard Commission Co., and George Seeds, Commodity Brokerage Co.

The election was held at a dinner meeting in the Cecac Club dining room.

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"What's the big news about BACIFERM®?"

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Tranquilizer Benefit for Poultry Explored at Rutgers Conference

By JAMES W. MILLER
Feedstuffs Staff

NEW BRUNSWICK, N.J. — How will feeding tranquilizer drugs benefit poultry? A number of major possibilities were explored at a conference on the use of Serpasil, a reserpine-type tranquilizer, at Rutgers University here May 7.

Sponsored by Ciba Pharmaceutical Products, Inc., manufacturer of Serpasil, and the poultry science department of Rutgers, the meeting reviewed tranquilizer investigations at eight different agricultural experiment stations. Points under study include:

- Reducing blood pressure and heart rate for relief of aortic rupture and control of field outbreak dissecting aneurysms in turkeys.
- Relieving thermal stress in poultry during periods of temperature extremes.
- Shifting thyroid size and serum cholesterol levels in caged layers to counteract atherosclerotic plaques and osteoporosis.
- Improving egg quality of layers.
- Enhancing feed conversion of broilers.

Feed manufacturers, nutritionists, college research workers and other industry representatives attended the meeting at the invitation of Rutgers and Ciba. The conference provided an opportunity for an exchange of ideas on eventual commercial application of the tranquilizer in the feed industry.

Under the chairmanship of Dr. Robert L. Squibb, head of the Rutgers Poultry Science Department, the conference covered the following topics:

THYROID, CHOLESTEROL RELATIONSHIPS IN CAGED LAYERS—A study on the effects of Serpasil feeding on body weight, feed consumption, egg production characteristics, thyroid size, serum cholesterol and atherogenesis in growing and laying single comb White Leghorn chickens was reported by Dr. D. L. Anderson and Dr. J. R. Smyth, University of Massachusetts, Amherst.

Control groups and those fed 0.5 mg. of Serpasil per kilo feed were compared at 19 weeks of age, Dr. Anderson said. Mean thyroid weights per 100 gm. body weight and total serum cholesterol levels at monthly intervals revealed a consistently smaller thyroid gland and increased cholesterol levels in the birds receiving the additive after 13 weeks.

No significant effects on egg production or hatchability were observed. The groups receiving the tranquilizer averaged 1.8 lb. feed per bird less than the controls. The depressed body weights of the Serpasil group recorded during the early part of the production period were mainly overcome by the end of the trial.

At 34 weeks the birds were subjected to an artificial thermal stress of 88 to 92° F. for 14 days. Prior to thermal stress, the Serpasil-treated groups had significantly lower total serum cholesterol and total egg yolk sterol. Two weeks following the end of the stress period these differences were non-significant, Dr. Anderson said. The incidence and severity of atherosclerotic plaques were significantly reduced in the presence of Serpasil.

Egg weight and albumen height, also, were significantly improved in the presence of Serpasil, according to Dr. Anderson. However, supplementation did not affect the significant reduction in egg weight, shell thickness and albumen height resulting from high environmental temperatures.

In conclusion, Dr. Anderson discussed the possibilities of Serpasil alleviating bone weaknesses in caged birds, based upon the fact that incidence of acute osteoporosis was reduced in the treated groups.

PHARMACOLOGY OF RESERPINE—Dr. Walter E. Barrett of the Ciba staff described the historic background of reserpine, indicating that in 1952 Mueller, Schlittler and Bein isolated a crystallin alkaloid from Rauwolfia serpintina which possessed sedative and hypotensive activity. Chemically identified as a tertiary alkaloid, the substance was given the name reserpine.

The speaker told of experimentation designed to localize the site of action of reserpine and recent biochemical experiments to obtain information on the mechanism of action of reserpine.

PROTECTION OF BROILERS AGAINST THERMAL STRESSES—Dr. Ray E. Burger, University of Minnesota, St. Paul, reported on studies of reserpine for its effect on the response in acute thermal stress of single comb White Leghorn chicks, 3-9 weeks of age. Serpasil and reserpine mother liquor were fed for a 4-8 day treatment in Serpasil equivalents varying from 0.5 to 60 mg./kg. of diet. Measurement adopted was the percentage mortality of treated chicks when 50% of the controls had died from thermal stress.

It was observed that a marked reduction in mortality was associated with feeding of high levels of Serpasil, Dr. Burger stated. This reduction is directly proportional to the logarithm of the dosage, he added, and reduction of mortality of 4% was observed at the highest dose fed.

Action of the tranquilizer in thermal stress may be independent of the quieting effect noted upon dosages above the 5 mg./kg., he said. Birds receiving the higher levels were not different in excitatory behavior in thermal stress than were the controls. Also, reserpine injected at comparable or lower doses than the orally administered dosages produced marked clinical symptoms of tranquilization although actually shortening survival time under acute thermal stress.

Other agents were studied under similar regimes, Dr. Burger reported. One study included central nervous system depressants such as chloropromazine, morphine, chloral hydrate, urethane and sodium barbital. These drugs were similar to Serpasil in that they either depressed or did not affect survival time when injected. Chloropromazine and morphine did depress mortality rate when fed.

From these results, Dr. Burger surmised that the probable effect of Serpasil in thermal stress is to reduce activation of the sympathetic nervous system. He said the treated animal with a smaller increase in heat production during the time of stress, thus, would be capable of better withstanding high environmental temperatures.

RESERPINE IN POULTRY NUTRITION—Dr. J. R. Couch, Texas A&M College, College Station, described Texas experiments with the use of tranquilizers in poultry nutrition.

He said a laying experiment with reserpine was initiated with 128 inbred hybrid laying pullets which were separated into four groups of 32 birds each. The 32 birds on a treatment were further separated into four replicates of 8 and placed in different locations in a standard caged layer house.

A 17% protein all-mash laying feed with quantities of vitamins and minerals in excess of NRC levels was used. The first group was fed the basal diet unsupplemented, and the second, third and fourth groups were fed the basal diet plus 0.25, 0.5 and 1.0 mg. reserpine per pound diet.

Dr. Couch reported that there was no difference in egg production, feed conversion or egg weight at the end of the 168 days. There was a decrease in the per cent of checks. Eggs were collected for a period of four consecutive days out of each 28-day period and carefully candled. It was reported that the percentage of checks was reduced 4.33 to as low as 2.01 by reserpine supplementation, and there was no mortality.

Studies with broilers at a level of 0.90 mg. reserpine per pound and used in the finisher feed only, produced an improvement of 0.07 to 0.10 lb. feed per pound of gain or feed conversion, Dr. Couch indicated. Another study in the field showed that reserpine may be of value in reducing losses with ruptured aortas in turkey toms at 14-16 weeks of age.

EGG SHELL QUALITY UNDER THERMAL STRESS—A paper prepared by Dr. J. C. Gilbreath, Oklahoma State University, Stillwater, was read at the meeting. His study was designed to measure the influence of low, continuous levels of Serpasil on the reproductive performance of commercial layers. In one phase of the study, the drug was administered at the rate of 2.0 mg./kg. all-mash feed through seven 28-day periods. Both treatment and control were replicated eight times, and 50 hybrid females were started in each replicate. The egg quality phase of the experiment occurred during the summer when naturally occurring thermal stresses were severe.

An analysis of the data for treatment and control pens showed no real difference in mortality. Pens receiving Serpasil showed no signs of sedation and social conflicts appeared to occur normally. Data on egg weight indicates a significant difference at the 5% level in favor of treated pens. Probability for a real difference existing in shell thickness for the treated birds falls in the 90-95% range, according to Dr. Gilbreath's study.

No difference was observed in albumen height, and it was noted that the mean daily high and low temperatures during the egg quality measurement periods were relatively high and uniform.

Feed consumption data indicate the treated birds consumed significantly less feed. Although the rate of egg production was uniformly high

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throughout the study, the treated pens laid fewer eggs. No difference between the two groups was observed on the basis of feed consumed per dozen eggs, nor body weight changes.

SERPASIL FOR REARING GAME BIRDS—The business of rearing pheasants for public hunting has doubled since 1955, and it is estimated that more than a million pheasants, quail and partridge will be raised for sport this year, Dr. Oliver H. Hewitt, Cornell University, Ithaca, observed. Rearing wild gallinaceous birds is complicated due to feather picking and cannibalism resulting, it is assumed, from hypertension caused by overcrowding.

Experiments with tranquilizers were encouraging, Dr. Hewitt said, with Serpasil producing the best results in all cases when administered at the rate of 2 gm. per ton of feed.

However, complete control of cannibalism was not effected, he said, and some experimental groups did not respond to treatment. When picking begins in a penned group of birds, it is possible that a more drastic step than oral administration in the feed is necessary. Another application that is being explored is the use of reserpine during banding and shipment from breeders to customers. Last year in a test involving 200 adult pheasants, the administration of an average of 40 mg. of Serpasil per bird on the day prior to shipment resulted in easier handling.

THERMAL STRESSES ON CHICKS—Two trials at the University of Georgia involving the effects of Serpasil on immature fowl grown at different environmental temperatures were reported by Dr. Till M. Huston. Using day-old White Plymouth Rock cockerels, one group was brooded with a constant room temperature of 85° F., the second at 70° F. and the third in an environment in which no attempt was made to control the temperature. All groups were grown in starting batteries until four weeks of age and then were transferred to growing batteries and held until eight weeks of age. Commercial-type growing rations were used.

The chicks in each environment were again subdivided into three equal groups. One received the basal ration, the second had 0.5 mg. Serpasil per pound of feed and the third 1.0 mg. Serpasil per pound of feed.

In both of the trials, the treated birds showed a slight but consistent growth increase over the untreated birds when held at 85° F., Dr. Huston said. There was also a slight decrease in body temperature which was statistically significant. This decreased body temperature suggests a possible relief from stress at high environmental temperatures.

As to oxygen consumption, birds fed the low level of Serpasil consumed more oxygen than did the control or high level groups. The within class correlation between thyroid size and oxygen consumption was not significant and slightly negative, around minus .15. On the second trial there were no significant differences in thyroid size and oxygen consumption between treatment groups, and feeding efficiency was not affected.

PROBLEM OF AORTIC RUPTURE IN TURKEYS—Noting that mortality from the occurrence of aortic rupture in turkeys is of considerable economic importance to turkey raisers, Michigan State University investigated the problem with studies using Broad Breasted Bronze turkeys.

Dr. Robert E. Ringer of the Michigan State poultry husbandry staff said reserpine was demonstrated to be a physiologically active, dietary hypotensive agent in the turkeys. Short four-week experiments revealed all dosage levels between 0.1 ppm. and 4.0 ppm. reserpine reduced the blood pressure, Dr. Ringer declared. However, levels above 0.3 ppm. apparently became toxic as evidenced by reduced weight gains in those lots receiving these levels. A possible growth stimulation was exhibited by groups at the levels of 0.1 ppm. and 0.2 ppm. A further short term experiment demonstrated a hemodynamic reduction by reserpine within three to four days following oral administration.

Nine to 12-week experiments incorporating reserpine into the feed demonstrated no significant differences in weight grains, Dr. Ringer said, however, a tendency toward increased weight gains and feed efficiency was exhibited by the 0.1 ppm. and 0.2 ppm. reserpine lots. The circulatory effect was a gradual reduction in blood pressure by all lots, the magnitude of this reduction depending upon the level of reserpine administered.

Although reserpine is a tranquilizer in addition to its hypotensive properties, no signs of reduced activity were noticed in any lot, according to Dr. Ringer. Birds receiving reserpine did not differ externally from controls, but they did exhibit reduced blood pressures and heart rate.

PHYSIOLOGY OF SERPASIL IN THE FOWL—Numerous reports show that reserpine decreases heart rate, blood pressure and body temperature in a number of mammalian species, Dr. Paul D. Sturkie, Rutgers University poultry science department, reported. The effective dose, he said, varies considerably between species.

Using dosages of 0.006, 0.01, 0.05, 0.10, 0.2, 0.3 and 0.75 mg./kg. Serpasil intramuscularly in adult White Leghorn capons, determinations and observations on blood pressure, heart rate, body temperature and state of tranquility were made before injection and 4 and 24 hours after injection. The sedative or tranquilizing dose is .2 or between .1 and .2 mg./kg. based upon behavior observations, he said. All dosages produced a significant decrease in blood pressure and the log dose response was essentially linear, Dr. Sturkie indicated. The decrease in pressure ranged from 5.7 to 19.0%.

All dosages from 0.01 mg./kg. and above produced a significant decrease in heart rate, and the magnitude of the drop was greater than for blood pressure, the speaker said. The chicken is more sensitive to changes in heart rate and blood pressure and requires larger doses for sedation than some other species. "From our work, we conclude that heart rate response is an efficient assay method for reserpine-like compounds," Dr. Sturkie said.

THERMAL STRESS OF LAYERS—Dr. Harold S. Weiss concluded the meeting with a report on the protective effect of reserpine in laying birds against high lethal temperatures. Small scale feeding trials involving laying White Leghorns indicated that continuously administered levels of Serpasil up to 2 mg./kg. feed were compatible with sustained egg production, Dr. Weiss said. Tests via the intramuscular route showed that 0.02 mg./kg. body weight per day was

(Turn to page 14)

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1. Bird, H. R.: Coming Events in Poultry Nutrition. Hatchery & Feed, July, 1958.
2. McGinnis, J. et al.: Use-history of Antibiotics as Related to Their Efficacy in Promoting Growth of Turkeys. Poultry Science, in press.
3. Whitehair, C. K.: Medicated Swine Feeds. North Am. Vet. (Am. J. of Vet. Sci.) 39 (No. 2) (Feb. 1958): 32.

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CENTRAL SOYA VISITORS—Two representatives of the Hohnen Oil Co., Ltd., Tokyo, Japan, visited Central Soya Co., Inc., Ft. Wayne, Ind., recently as part of a world-wide tour to study the soybean industry. Shown as they discussed soybean processing and the soybean industry are the presidents of their respective companies, both major soybean processors, and their technical directors. They are (left to right): Dale W. McMillen, Jr., Central Soya president; Norman F. Kruse, vice president and technical director of Central Soya; Mitsuo Hirano, managing director of Hohnen Oil, and Ryoji Mamine, assistant manager of the Hohnen research department. Japan bought nearly a third of all U.S. soybeans exported in the October, 1957-September, 1958, crop year.

similarly compatible. In some cases with higher dosages, four weeks elapsed on oral treatment and seven days on intramuscular injection before any depression of egg production was apparent. This suggests he said, that four weeks should be allowed for full physiological expression of Serpasil administered by the oral route.

Six temperature stress experiments using oral doses of Serpasil of up to 2 mg./kg. feed were conducted on 140 layers. One additional experiment involved an intramuscular dose of 0.02 mg./kg. body weight per day for 30 days. Five trials utilized heat stress, applied by restraining from one to four birds at a time in a small incubator set to maintain 105 plus or minus ½ degree and 70 plus or minus 2% relative humidity.

Body temperature, respiratory rate, heart rate and blood pressure were measured at the start of the stress and monitored continuously through the stress by means of remote recording equipment. Tolerance to heat was measured by survival time in four trials in which death was the end point. In one trial, tolerance to heat was estimated from a "respiratory factor" based upon peak polypnoea during hyperthermia.

Dr. Weiss said that at the end of the feeding periods there were no over-all differences in behavior, body weight or egg production between the control and treated groups. Body temperature, respiration rate, heart rate and blood pressure were lowered slightly by reserpine treatment, but mostly of borderline significance. Survival time was increased in three of the four heat trials in which death was the end point by an average of 27 minutes, or 23%. In the trial in which the respiratory factor was used, a corroborating 27% improvement in heat tolerance was measured.

At hyperthermic death, body temperature of the treated birds was slightly elevated, but not significantly so, indicating that the improved tolerance probably was more related to decreased heat production or increased heat elimination than elevation of the lethal temperature point, Dr. Weiss said. That increased heat elimination was a factor was suggested by the generally higher and longer sustained peak panting rates attained by the treated groups during heat stress, according to Dr. Weiss.

Questions Suggested For Answering Before Entering Hog Contract

AMES, IOWA—Iowa Farm Science, published by Iowa State College, said in a recent issue, "In some areas, contract farming has provided needed credit and other facilities for farmers operating on poor soils and very short of capital. But the decisions for Corn Belt hog producers are much more complicated."

As an aid to the hog producer thinking of entering vertical integration with a contract agreement, the authors of an article in the publication—Dr. Lee Kolmer and Dr. Laurel D. Loftsgard, agricultural economists at Iowa State and North Dakota State, respectively—suggested that his own answers to the following questions may help him decide:

- "Will the added capital (credit), the added management and the marketing arrangement enable you to use your present capital, labor and management more profitably?
- "What is the actual cost of the added capital and management?
- "Can you get the same feeds and services at a lower cost from other sources—other feed dealers, banks, county extension services, the commercial farm management companies?
- "Are you willing to commit yourself to the contract conditions and the necessary investments—knowing that the life of the capital investments such as buildings and equipment may be much greater than the length of the contract?"

Nominated Mayor

JACKSON, TENN. — Q D Edmonds, president of the Model Mill Co., Jackson, and long a prominent member of the Tennessee Feed Manufacturers Assn., won the Democratic nomination for mayor of Jackson in the recent primary, which is tantamount to election as the city's chief executive. Mr. Edmonds said he would devote full time to the mayor's duties and would resign his business position. The Model Mill Co. is a unit of Martha White Mills, Inc., Nashville.

Scholarship Winner

FT. WAYNE, IND. — The Central Soya Co., Inc., merit scholarship has been awarded to Kent H. Westley, son of Mr. and Mrs. Richard O. Westley, Elmhurst, Ill. Kent was one of the nation's 850 winners from among 480,000 high school seniors who entered the scholarship competition. Central Soya Co., Inc., is one of 90 business and industrial corporations, foundations, professional associations and others sponsoring the scholarship program.

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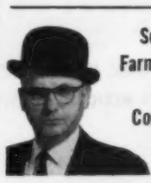

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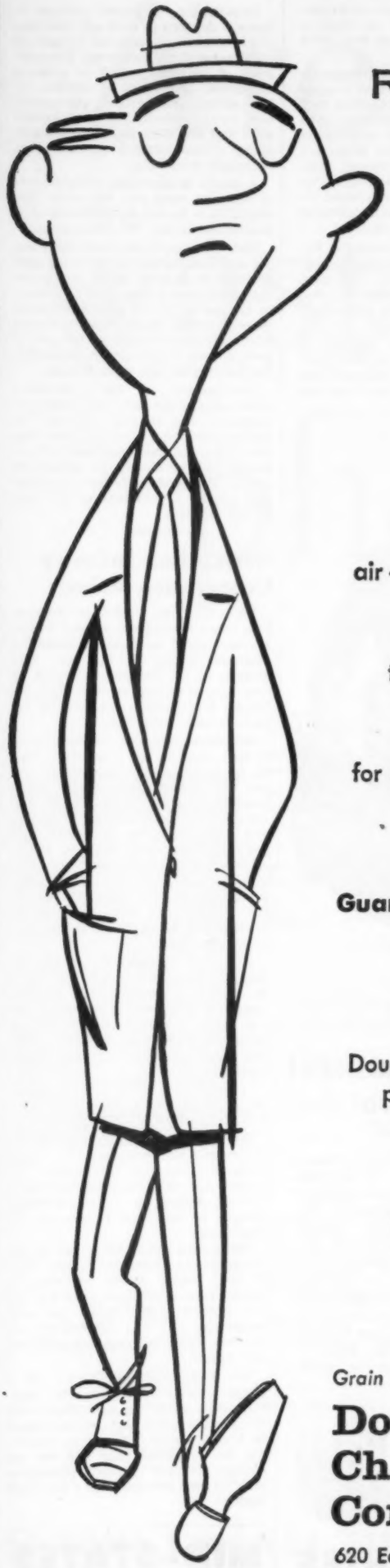

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Pacific Northwest on Way to Being Self-Sufficient in Corn for Feed

CORVALLIS, ORE.—Corn production is increasing so rapidly in the Pacific Northwest there is the possibility that in 1959 Oregon, Washington and Idaho farmers may raise as much corn as has been used each year in these states, according to Marion D. Thomas, Oregon State College extension agricultural economist.

Mr. Thomas considers this an about-face for Oregon, long considered a corn-importing state. Until recently, Oregon shipped in more than 2 million bushels of corn a year, mostly from the Midwest.

The state's total corn production last year topped the 3 million bushel mark for the first time, nearly triple the amount five years earlier. Early planting plans indicate a 30% increase in acreage for 1959.

About two thirds of last year's total production was for grain, the rest for silage and green feed. Oregon farmers are finding they can get 25-30 tons of corn silage per acre, reported Rex Warren, extension farm crops specialist at Oregon State. He added that corn silage is being used more and more as a feed for beef as well as dairy cattle.

In its early days, Oregon's prospects of becoming a corn-raising state appeared dim. Attempts of pioneers to grow corn proved quite unsatisfactory. Varieties settlers brought with them were not suited to Oregon's cool summers and low rainfall during the growing season. A survey in 1908 found most farmers agreeing that corn could not be grown profitably in the state.

Last year, just 50 years later, an Oregon entry of 163.9 bu. an acre ranked above entries from all other states in a nationwide corn seed company yield contest. And top yield in the 1958 State Corn Show was 182.9 bu. an acre.

Dr. D. D. Hill, head, farm crops department, said it is true that Oregon conditions aren't quite as good as they should be for corn. "Growing corn in Oregon requires more managerial ability than it does in the Midwest's Corn Belt," he said. "However, various factors are helping overcome this situation and point to a continued increase in Oregon's corn production at least for the next few years."

Mr. Thomas said that once the Pacific Northwest becomes self-sufficient, corn production probably will level off, for it won't be profitable for farmers to continue increasing production at the rate they have been.

The number of acres planted to corn in Oregon—47,000 in 1958—has more than doubled in the past five years. Average yields have jumped from 55 to 70 bu. an acre during this time.

Reasons for the recent increase in acreage devoted to corn and the high yields obtained throughout Oregon include some of the following: Development of varieties suited to growing conditions, production of efficient labor-saving mechanical equipment, new weed controls, increased knowledge and use of fertilizers and availability of land formerly used for crops no longer profitable.

A desire to overcome freight costs of shipping corn into the state also might be a factor in increased corn production locally, Mr. Thomas said.

Not too many years back the picking and shelling of corn were a major problem in the state. Since corn growing didn't have a long, prolific history in Oregon as it did in the Midwest, there weren't many people around who were experienced in the art of picking corn. It was almost impossible for farmers to hire corn pickers.

Development of the mechanical picker-sheller not only eased that predicament, but it also relieved the moisture problem. Since moisture content is high in Oregon-grown corn, it nearly always has to be artificially dried. The picker-sheller simplifies this process by eliminating the need to dry the cobs.

Burlap Bag Industry Cooperation Asked

DES MOINES — Mutual cooperation among members of the industry was asked by Harry Pomerantz, Midwest Burlap & Bag Co., Des Moines, in his acceptance speech as new vice president of the National Burlap Bag Dealers Assn. at its recent annual convention.

Mr. Pomerantz said the association is now able to fill "the vital need for an exchange of information" and can now explore the possibilities of credit reporting on delinquent and past-due accounts; inventory control, and information on available supplies throughout the industry. "Closer relationships with the Textile Bag Manufacturers Assn., the International Bag Manufacturers Assn. and the Indian Jute Mill Assn. would further the interests of the association," he said.

Also, Mr. Pomerantz noted the gains in reprocessing programs, and he said it is evident that the association "has become an important cog in the wheel that includes the growers of the jute, the jute mills, the converters and the bag manufacturers."

Cyanamid Award

UNIVERSITY PARK, PA.—R. H. McDougall, Butler County (Pa.) agricultural agent, has been named to receive the 1959 Distinguished Farm Service Award of the agricultural division of American Cyanamid Co., New York.

The award will be presented at the Pennsylvania State University May 28 at a dinner in Mr. McDougall's honor. Eric A. Walker, president of the university, will make the presentation, and Dr. Robert White-Stevens, Cyanamid research scientist, will speak.

Mr. McDougall will receive a plaque inscribed to him for "outstanding service" to agriculture and in token of the service performed by county agents everywhere, according to Cyanamid. He has set up widely-accepted pasture programs, and has been prominent as a 4-H Club leader.

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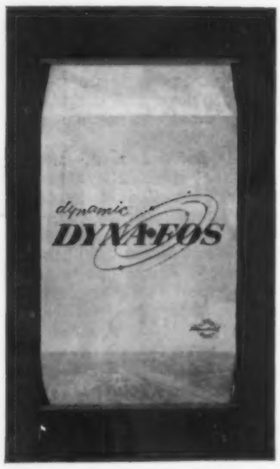
- ☐ with too wide a calcium-phosphorus ratio
- ☐ assuming that all chemically processed phosphates are alike
- ☐ assuming that phosphates of inferior quality are satisfactory under "practical" conditions



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Economic Integration in the Meat Industry

Part I

● *Broilers* ● *Pork*

By Dr. Paul Roy and Dr. Stewart Fowler
Louisiana State University

Dr. Paul Roy

Dr. Stewart Fowler

AUTHORS—Both authors of the accompanying article are on the staff of Louisiana State University, Baton Rouge. The article represents a rather unique collaboration in that Dr. Roy is an agricultural economist also interested in animal production, and Dr. Fowler is an animal husbandman also interested in marketing. The senior author (Dr. Roy) has done research in economic integration since 1952 relating to broilers, table eggs and canning crops. The junior author (Dr. Fowler) has done considerable research and writing in animal production and has had professional experience in Florida, Texas and the state of Washington.

EDITOR'S NOTE: This is the first of two articles on economic integrations in the meat industry, a development which, of course, has had and is likely to have tremendous effects on the feed industry. The first article deals with economic integration in broiler chickens and pork, and the second will deal with beef and lamb contracting. The articles are based on research data, experience and observations accumulated by the authors, working in agricultural economics and animal husbandry, respectively.

No economic development in agriculture during the first half of the 20th century has attracted as much public attention as economic integration. The debates over price parity and acreage controls in the early 1930's would, of course, probably run a close second. Integration is not a new thing since business and industry have utilized integration since before the turn of the century. Agriculture, on the other hand, has long been a family, small proprietor business perfectly competitive and making thousands of independent decisions daily in regard to production, marketing and price. No one farmer ever has had much significance in the marketing place, contrary to some business firms. Our main theory is that business views agriculture as virgin territory in which to integrate, and farmers, likewise, view integration as a virgin technique to stabilize their markets, stabilize price and hence their incomes.

Role of Feed Industry

The feed industry, because it supplies the most important cog (feed) in the wheel of animal production, inevitably had to be the one to spark better marketing of the finished product so that its own product (feed) would be stabilized.

The use of various contractual devices was only natural as a tool to effect this economic goal. Modifications in such devices came from trial-and-error. The future could bring more permanent integration, but competition will dictate this permanency.

Also, it was inevitable that animals with a rapid feed turnover would be first to integrate (broilers) and cattle feeding somewhat slower, with hogs, sheep, eggs and turkeys somewhere in-between.

Thus, economics have dictated what, when and where the feed industry would integrate.

It is not sound to criticize the feed industry for integration any more than it would be sound for us to criticize auto makers for putting carriage-manufacturers out of business, unless some of us want to drive horse carriages while our neighbors drive by in more comfortable vehicles.

Whether or not economic integration gains in the meat industry, it would be wise to make some estimate of why integration is coming, how it may come, and how much of it can be expected?

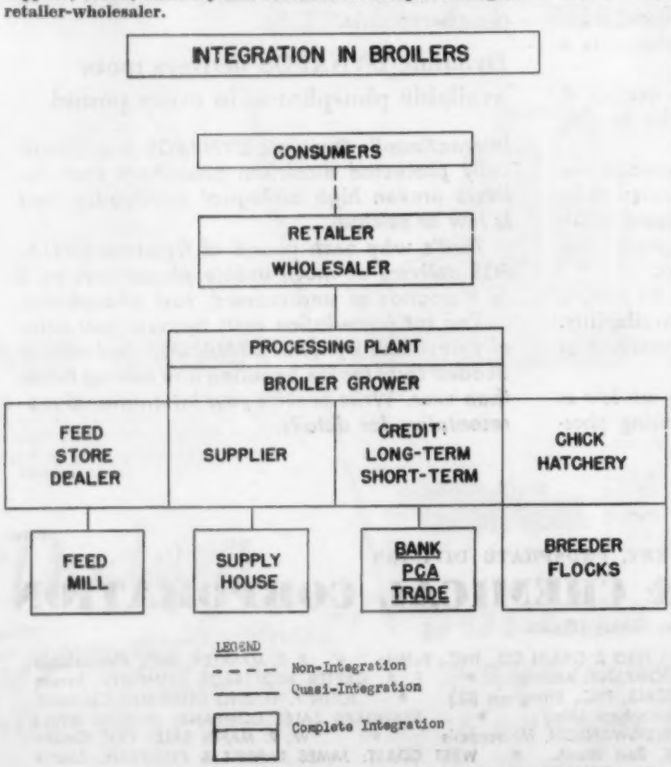
To facilitate this exposition, the meat industry is grouped as follows:

Part I: (A) Broiler chickens and (B) Hogs.

Part II: (C) Beef cattle and (D) Sheep and lambs.

Broiler chicken production (white meat) has already undergone about 90% integration at the producer level, while the (red meat) group composed of hogs, beef cattle and lambs has experienced perhaps 10-15% integration at the meat producer level on an aggregate weight basis. The relative positions of meat enterprises are shown in Table 1.

FIGURE 1. Complete integration of broiler grower, processor, feed dealer, supplier, credit, hatchery and breeders vs. complete integration of food chain retailer-wholesaler.



PART I

(A) BROILER CHICKENS: The marketing system for broiler chickens consists of live 8 to 10 week old broilers leaving the broiler house; to the processing plant; to wholesale-retail food units, and finally to consumers (Figure 1). During and after World War II, red meat shortages caused increased emphasis on and investments in white meats. The broiler chicken was relied upon principally because it converted feed efficiently, grew fast, and the final product was very palatable. From an investment viewpoint, broilers were attractive because industry technology was first-class, turnover was rapid and risks could be shared with others.

At the **retail-wholesale food store level,** profound changes were occurring. The chain food stores were expanding horizontally at a fast pace by building new stores and buying out existing stores. This horizontal integration gave them added strength in vertical integration; thus, chains became the strongest buyers of broiler chickens both in their volume requirements, price bargaining and promotional strategy. The smaller, independent stores had their backs to the wall; so they organized cooperative chains to resist the onslaught of proprietary food chains. The co-op grocery formula was successful, but it added another strong dimension in food buying and increased the concentration in the food industry. Sooner or later, red meats would be affected in the same way as broiler chickens.

At the **processing level,** broiler chicken packers responded to chain food store integration by attempting to match the buying power of chains. Processors integrated horizontally by expanding plant capacity; building multiple units and also buying-out smaller processors. To facilitate this, processors integrated vertically by either controlling broiler supply or else made quasi-integrative agreements with feed dealers to move broiler chickens year-round. Lately, processors have felt that they need even more control than they now have.

At the **broiler grower level,** the fundamental change resulted from growers wanting to share risks with stronger dealers and stronger processors. The independent grower had no recourse but to join the combine working for a wage plus an efficiency clause. In the future, one recourse broiler growers may use is to form collective bargaining associations to protect their wages. Cooperative businesses were too slow to recognize what had happened, so many lost by default, for the most part, to proprietary businesses.

It was at the **dealership level including feed, hatchery and supplies,** the integration was focalized. Dealers realized that feed, chicks and supplies had to move on a regular schedule, year-round and, likewise, marketing agencies had to respond to the same economics. It was inevitable that dealers should initiate integration and sooner or later control it. Their main weakness lies in their failure to integrate enough rather than too much. To make any integration fool-proof, one must control and/or coordinate the product from feed and day-old chicks to the retail level but not beyond. To go beyond this is disastrous as chain food stores would be met.

Do broiler chickens as a representative of the "white meat" group serve as a good model of integration for the "red meat" group? The answer is "yes," but it is qualified. The broiler chicken is a small animal with a short life cycle. It eats no roughage and requires a ration of concentrates and grain. It is capable of mass concentration. It is more standardized and homogeneous than other farm animals. Research hypotheses are easily set-up and, often, easily proved or disproved and within a short time. Economic analyses of broiler chicken operations are more easily made and are more reliable than those dealing with other farm animals. Technologies of the industry are more specific and limiting so deviations in optimum management and marketing are quickly penalized.

Therefore, no red meat animal duplicates the specifications set-up for broiler chickens. It is obvious that hogs come closest; lambs next, and beef cattle probably further away from these specifications. The balance of this article is devoted to estimating how the meat marketing system may operate during the next decade and how a production program for the swine grower can be devised to fit these expected marketing changes.

(B) HOGS: The marketing system for hogs hay be affected by the following conditions:

● As far as the **general economic picture** is concerned, consumers will find a fully employed economy made possible through further moderate inflation with per capita spending increasing moderately. Thus, pork and red meat demand will not suffer from any deficiency in consumer income and should make a favorable economic climate.

● Less "blue collar" workers, fewer farm people but more "white collar"

TABLE 1. Relative Positions of Meat Enterprises in Per Capita Use, U.S.A., 1957, Adapted from USDA Data.

Enterprise	Lb. used per capita	Per cent of total
Livestock	167	63.7
Beef and veal	97	37.0*
Pork	65	24.8*
Lamb and mutton	5	1.9*
Poultry	85	32.5
Broilers	23	8.8*
Eggs (shell)	47	18.0
Turkeys	6	2.3
Ducks, geese	1	.4
Other chickens	8	3.0
Fish	10	3.8
Fresh/frozen fish	5.7	2.2
Canned/cured	4.3	1.7
Total	262	100.0

*About 72½% of the U.S. meat industry is involved in the analysis provided in these two articles. Of the remaining 27½% not covered, eggs comprise 18%.

workers will intensify the shift in pork demand from fat to meat-type hogs. White-collar workers will dictate a large part of the retail food demand, and their dictation will result from having less manual labor and more desk-jobs; low calorie, high protein, special diets; plus more automation in family living. If meat-type hogs are not forthcoming, then pork demand may fall off drastically since broiler chickens and processed red meats can readily make-up for any loss in pork.

Pork demand is "inelastic"—it does not adjust quickly to any change in available supply. A reduction of supply brings sharp changes in price. A 10% smaller supply may result in an increase in prices of hogs of as much as 25%. Low hog prices at retail usually fail to attract enough consumption to maintain total income. So, if the price won't attract consumers, perhaps a better pork product will. The hog industry has been always confronted by a sharp sensitivity to variations in supply, and by a failure of demand to increase very much. Demand for pork has slowly given way to that for beef and poultry. Furthermore, hog production is responding to new production technologies permitting rather sharp increases in supply.

● **Chain food stores will become stronger bargainers** and more specific in their requirements. Chain managers are not especially anxious to help the pork industry, if the industry does not help itself. After all, there are over 8,000 items in a major supermarket and whichever item fails to move in volume in relation to the space it occupies may be dropped. In the 1930's, consumers spent 3¼% of their disposable income on pork but spent only about 2% in 1957.

● Packing facilities plus an executive and labor force **force packers to try to operate at capacity.** If packers have to over-build to handle a surplus of fall hogs, then the packer is likely to run below his capacity the rest of the year. This forces him to take higher margins and pay farmers less. Connected to this is the vast storage operations of meat packers where some of the fall-run has to be carried over and inventoried into the winter and spring. No doubt margins taken by packers reflect this cost and risk. Multiple farrowing would eliminate storage except for short periods.

If the packer gets lard-type hogs, he has two strikes against him: (a) Lard is worth less and less. One pound of pork fat is worth about 9¢ to the packer, but one pound of loin is worth perhaps 45¢. Also, it costs the hog farmer perhaps 12¢ or more to put one pound of fat on his hog, but that pound is worth only 9¢ to the packer. (b) Fat-type hogs will meet tougher consumer resistance at the retail store level. At present, the packer probably cannot afford to take lower meat margins because of uneven marketings, poor lard disposal and increasing meat sales resistance. The present "open market" system fails to provide the necessary mechanism for price differentials between different carcass grades. It is possible that some hog growers will never get the message until and unless they get on a "contract." For example, the yield of primal cuts (loin, ham, picnic, Boston butt) in a fat-type hog may average 30% of its live-weight and 43% of the dressed-carcass weight. But, for meat-type hogs, the yield of primal cuts may average 35% of its live weight and 50% of its dressed carcass weight. Thus, a given 200-lb. hog of the meat-type may bring the packer quite a sum more per head depending on the value ratio of primal cuts to the other cuts.

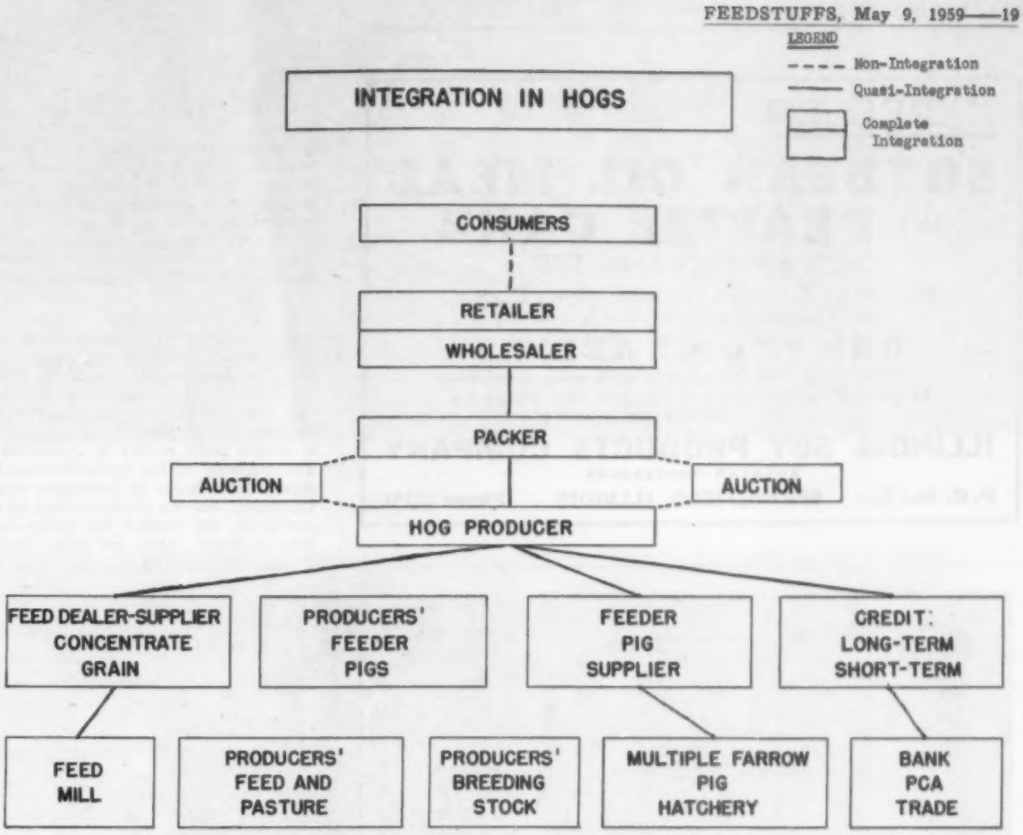


FIGURE 2. Possible arrangements for economic integration in pork utilizing non-integration, quasi-integration and complete integration.

● Swine herds, like hen egg flocks, will disappear from the small farm because farm people are fewer and those that remain prefer home freezers and frozen meats to cured pork and pork products. Lard is no longer used for cooking and has been substituted by vegetable fats which doctors applaud in light of increasing heart disease. Thus, swine herds of the future will be **operated by specialized herdsmen with large-scale operations.** The small operator can find a place in these larger operations but not as one who grows-out two or so litters a year. A summary of the marketing situation reveals that large chain buyers (representing consumers' demand and preferences) will come face to face with pork packers (representing dealers who in turn will represent their pork growers), and a coordination will have to result between the buyers and sellers, unlike the system which now generally prevails.

Although there are packers, dealers and growers, among others, involved in the production system for hogs, the rest of this report centralizes around the "grower" and how he might fit into this changing hog industry. Those selling to and/or buying from "growers" will be affected by their decisions (Figure 2).

Swine Production

● If rising land value in the years ahead should restrict grazing and hogging-off, **hogs can be produced successfully under drylot confinement.** Current knowledge of protein and energy levels and of vitamin and mineral requirements enables the swine producer to provide completely balanced rations which meet every need for efficient production and reproduction. The successful operation of pig parlors has demonstrated the adaptability of the hog to finishing for market under confined feedlot conditions, and research indicates that the reproductive phase should respond as favorably. This should give added stimulus to integration in swine production, because the feed mills engaged in formulating efficient drylot swine rations will find hog contracts desirable insurance for "high tonnage" output. Thus, hog production will become more competitive and dependent upon feed efficiency factors for profitable survival.

● Producers should intensify their efforts to stabilize their output of hogs. **Multiple farrowing is the way.** One alternative is to breed a few sows each month of the year, so as to have a few hogs ready for market throughout the year. This provides the producer with a monthly pay check and spreads out his "market risk" while allowing full advantage of limited

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TABLE 2

Sow group	Breed	Farrow	Sell (6 mos.)	Re-breed	Farrow	Sell (6 mos.)
A	Feb. 1	May 25	Nov. 25	Aug. 1	Nov. 22	May 22
B	May 1	Aug. 22	Feb. 22	Nov. 1	Feb. 22	Aug. 22

farrowing facilities. This would correspond to starting pullet chicks on schedule so as to have an egg supply year-round. A more common practice, however, is to breed two sets of sows to produce four pig crops per year. This may be accomplished by following a set schedule of production such as in Table 2.

A system of multiple farrowing would diminish the two-cycle price pattern as a result of two pig crops being produced each year. More pigs are born in this country in March and April than in any other months, and August and September constitute a second peak period in farrowing. The majority of the spring-farrowed pigs reach market in November and December, and the fall-farrowing pigs arrive on the market the following year in March, April and May. Thus, two periods of surplus marketing exist and are often identified by depressed prices. The outstanding merit of a multiple-farrowing system at present is that the producer is never caught with a lot of hogs when prices are low and will always have a few to sell when prices are high. The table egg business has already justified this replacement procedure.

As previously indicated, seasonal gluts of the market constitute a real hardship for the packers, especially the smaller slaughterers. Consequently, contracting on a multiple farrowing basis has considerable appeal to many packers. It could level out their year's receipts, thus facilitating the most efficient use of labor and facilities, while insuring a constant year-round supply of quality hogs tailored to modest plant investments.

● The only type of hog to produce for today's—and tomorrow's—market is the meat-type hog. This means a **hog with the maximum of lean meat development in the primal cut regions** and only a minimum amount of fat to give extra flavor, tenderness and palatability to the cuts.

The easiest way to produce meat-type hogs is to breed toward that goal. True enough, some modification in type can be accomplished through a well-planned feeding program. However, it is impossible to feed muscle onto a hog that does not possess the inheritance for full muscle development. Just reducing fat is not the answer in the production of meat-type hogs, because starving the fat off of a muscle-deficient hog accomplishes no economic gain. There must be a maximum of lean meat, and this will necessitate the identification of well-muscled breeding stock to be used in carefully planned breeding programs to establish more meaty swine strains.

Within every breed there are hogs of meat type that will reach market weight in six months or less and make really efficient gains. It is the job of the breeder to identify these individuals and then concentrate and expand such strains within the breed. There are several methods that can be used to identify animals carrying superior muscle development, but the one that is probably most reliable is progeny performance testing through carcass evaluation. This is carried out by mating a boar to a small group of sows and slaughtering a sample number of pigs at market weight to determine their carcass desirability. This samples the genetic worth of the boar. If the slaughtered progeny prove desirable, the boar can be used to fullest advantage the following season with a reasonable degree of assurance that progress will be made toward attainment of a meat-type herd. In addition, brothers and sisters of the high-testing slaughter animals can be used to good advantage in the breeding herd. Use of artificial insemination could be employed to further expand the progeny of performance-tested sires.

Desirable carcass data would include backfat thickness, carcass length, and the area of the cross-section of the eye muscle of the loin, cut at the tenth-eleventh ribs. Most packers are willing to cooperate in securing such data. One successful

(Turn to page 24)

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swine producer at Pullman, Wash., has worked out an agreement with a local slaughterer to market his hogs direct in return for such carcass data as listed, and receives a "bonus" for each carcass that meets the specifications of the national Certified Meat-Hog Program. Five-square-inch loin eyes are becoming quite common in his herd, because the producer knows what each animal is producing in the way of meaty hogs and selects and culls accordingly.

The commercial producer may improve the market type of his hogs by grading-up through the use of good, performance-tested purebred boars, or he may consider the use of meat-type boars on currently available, but less meaty, sows in a crossbreeding program. Results at several experiment stations indicate that the progeny from such crosses are more nearly like the meatiest parent.

● It appears that **swine production may be headed in the direction of a pork assembly line** in the years ahead. The producer's end of the assembly-line production program may exist in several different forms. Probably the two major alternatives, however, will be a combination of **(a) pig hatcheries and pig parlors on separate farms or (b) an intensified breeding and feeding operation on the some farm.**

The hatchery-parlor combination is tailor-made for integration. Each unit is very highly specialized to perform its individual step of the pork assembly line. Pig hatcheries are highly specialized swine establishments which produce and sell weanling pigs, usually throughout the year, for growing and fattening on other farms. They make it economically feasible to provide better buildings and equipment for the year-round production of uniform, thrifty pigs. The hatcheries reduce the feeders' investment in buildings and equipment and make possible the rapid expansion of feeding operations. At the same time, they require considerable capital and superior hog-production knowledge, and they are not adapted to small operations. Thus, their advantages and disadvantages would make them a "natural" for integrated swine production.

Pig parlors are the ideal "running mates" for the pig hatcheries. These units are basically a covered cement floor with automatic waterers and self-feeders that are designed to handle about 50 pigs as a "unit" from weaning until market weight is reached. They permit intensified swine finishing on the least amount of ground and any number of units may be put into use, depending upon the nature of the farm set-up. Some feed dealers have financed such parlors to insure outlets for feed, while some packers have participated in an effort to secure a more uniform flow of meat-type hogs through their plants.

One of the major considerations in pork output is a suitable supply of feeder pigs. The lack of a constant supply of uniform, thrifty feeder pigs is the number one obstacle to swine production. Many farmers who would like to finish hogs for market refrain from doing so because they dislike the drudgery that accompanies farrowing, or they do not have sufficient buildings and equipment or adequate experienced labor to handle a breeding herd. A good source of feeder pigs would put such farmers into the hog finishing business.

Good feeder pigs should be uniform, thrifty, and healthy and be genetically proven capable of making rapid and economical gains. Under present conditions, a constant supply of such pigs is often difficult to locate. Uniformity of type and performance is difficult to obtain when feeder pigs must be purchased from several different sources, and the disease potential multiplies with each additional source of supply.

One good possibility for providing adequate numbers of good feeder pigs is the return to large pig hatcheries. When pig hatcheries first became popular several years ago, they were plagued with considerable disease and parasite problems arising from the concentration of numbers in closely confined quarters. However, "disease-free" pigs are now a reality for large well-managed hatcheries.

As an alternative to pig hatcheries, small producers could be contracted with to produce and sell weanling pigs, sired by performance-tested boars, to a feeder-pig dealer. The dealer would transport all pigs to a central point where they would be pooled and then carefully sorted and graded into uniform lots. All pigs would be placed on a suitable creep feed, fortified with a high level of antibiotic, and all necessary vaccinations for such diseases as cholera and erysipelas would be completed. The pigs would then be delivered to pig parlors or feed lots "on order" in uniform lots. The feeder-pig dealer might integrate small producers and supply breeding stock of uniform, performance-tested breeding to further improve the uniformity and merit of the pigs handled. By the same method, a large feedlot operator might integrate his program by financing and/or providing breeding stock to a number of small producers who would sell all of their weanling pigs to the feedlot operator. Also, a feeder pig cooperative might work likewise.

● Such coordination of the pork assembly line should result in higher prices to swine producers and/or lower pork prices for consumers, thus **placing pork in a stronger competitive position.** Consumer demand would be reflected back more accurately to the producer, thus fitting production to demand. The producer, the packer, and the retail meat dealer would produce and prepare the kind and quality of pork cuts that are in most effective demand and produce them in the quantity and rate which fit the demand of consumers.

The major problem in integration, initiated at some point other than by the producer, will be **to compensate**

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the producer adequately for his work and still maintain his incentive for efficiency and production which he had as an individual operator under a system of simple ownership. In other words, care must be exercised to prevent the farmer under contract from becoming a hired man who merely sells his labor to the contractor on a time-clock basis. Many different types of contracts are currently in use in the swine industry. Basically, most of these may be classed under two general types—the feeder-pig contract and the sow-and-pig contract.

The **feeder-pig contract** is very similar to the broiler contract. A feed dealer may serve as the integrator and supply the feeder pigs, grain and/or supplement, veterinary care and specialized management. The farmer furnishes labor, facilities (perhaps financed by the integrator), electricity, and water. The integrator determines the number of pigs to be fed and takes the pigs when they are ready for market. The feed dealer may bargain directly with the packers to obtain a premium on the pigs that are of high quality, meat type. In return for the farmer's contribution, a common rate paid is 2¢ per pound of gain. A more equitable method might well be a flat payment of a fixed amount per pig handled, plus a share of the net profits. Another method is to compute the labor profit, by deducting the cost of the pigs, feed, veterinary charges, etc., from the proceeds of the sale of the pigs; then the integrator gets a flat payment per pig, perhaps the first $3 of the labor profit, and the remainder is divided equally between the farmer and the integrator. Feeder-pig contracts are limited at present by the supply of feeder pigs available.

In the **sow-and-pig contract**, the integrator may lease bred sows or gilts or boars to farmers. The trend is in the direction of supplying performance-tested strains of meat-type hogs. Such contracts are quite variable as to the management instruction and restrictions by the integrator. A multiple-farrowing system may be stipulated; and if a feed company is the integrator, the producer will probably have to feed the company's supplement according to specified instructions.

In summary, many similarities exist between pork and broiler integration. It is believed, however, that independent pork operations will have a considerably longer span of life than did the broiler independents. The exact life span of the pork independent will depend on how quickly the needed market adjustments are made.

Reports Effects of Increased Calcium

ATLANTIC CITY, N. J. — Dr. George K. Davis, Florida Agricultural Experiment Station, reported at a symposium on high calcium intake conducted by the American Institute of Nutrition as part of the recent annual meeting here of the Federation of American Societies for Experimental Biology that, in animals, increasing the calcium above 1% may have a sharp depressing effect upon the utilization of other nutrients in the ration.

These other nutrients, he said, include protein, fats and vitamins, phosphorus, magnesium, iron, iodide, zinc and manganese, when these nutrients are at a marginal intake.

"There is as yet no clear picture of how the excess calcium exerts its influence," he said.

MISSISSIPPI CHARTERS

JACKSON, MISS.—Domestic charters for the following have been recently issued by secretary of state Heber Ladner's office: Shannon Grain Co., $100,000; Tupelo Poultry & Livestock Farms, Inc., $50,000; Rice Producers, Inc., Shelby, $5,000; Lansing Farms, Inc., Magnolia, $5,000; Bar M Livestock Co., Fayette, $40,000, and Rawhile Farms, Inc., Meridian, $50,000.

Idaho Stilbestrol Studies Reported

MOSCOW, IDAHO—Tests by the University of Idaho indicate that stilbestrol increases the rate of gain on beef and adds to the total weight at slaughter. A summary of results obtained at the Caldwell branch has been prepared by Dr. T. B. Keith, professor of animal husbandry, and J. J. Dahmen, branch station superintendent.

Groups of steer calves received different amounts of the hormone. There were 12 mg. and 36 mg. implants, and 8 mg. administered in feed. The results showed both the 12 and 36 mg. implants gave about the same rate of gain. Gains obtained with implants were as good as those produced with oral feeding.

Increased gains were found when stilbestrol was used with high grain rations or with high roughage rations, the researchers reported. Implants of both sizes lasted on the steer calves until the last of the 224 days spent on the experiment. The comparative rate of gain was about the same.

Examination of carcasses after slaughter suggested that the stilbestrol treatment and the level of soybean oil meal intake had no apparent effect on the grades. However, steers fed the 2 to 1 ratio of concentrate to roughage had the most carcasses in the higher divisions. The area of the rib eye of stilbestrol steers was smaller than it was in steers fed the same ration without the hormone.

Carload of Dog Food

VICKSBURG, MISS. — The first carload shipment of dog food out of Vicksburg was made recently under consignment to Rex Milling Co., New Iberia, La. The shipment of Happy Dog Crumbles was manufactured by Hill City Mills. The dog food, company officials said, has a meat-cereal base.

The Vicksburg firm, a division of Western Star Milling Co., Salina, Kansas, has announced expansion of over-all operations. Another carload was scheduled to follow the New Iberia shipment. Hill City Mills also makes dog food for its own label and for the P. P. Williams Co. and the Russell Co.

VERTICAL INTEGRATION PREDICTION MADE

MILWAUKEE, WIS.—A prediction that within 10 years most farm production would be under contract in vertical integration was made here recently by Charles B. Shuman, Sullivan, Ill., president, American Farm Bureau Federation.

Here to speak at a meeting of the Milwaukee Farmers, Mr. Shuman said he believed this development would not destroy the farmer's independence, but would give him a tool in bargaining. He also expressed a belief that the family farm is in no danger of extinction.

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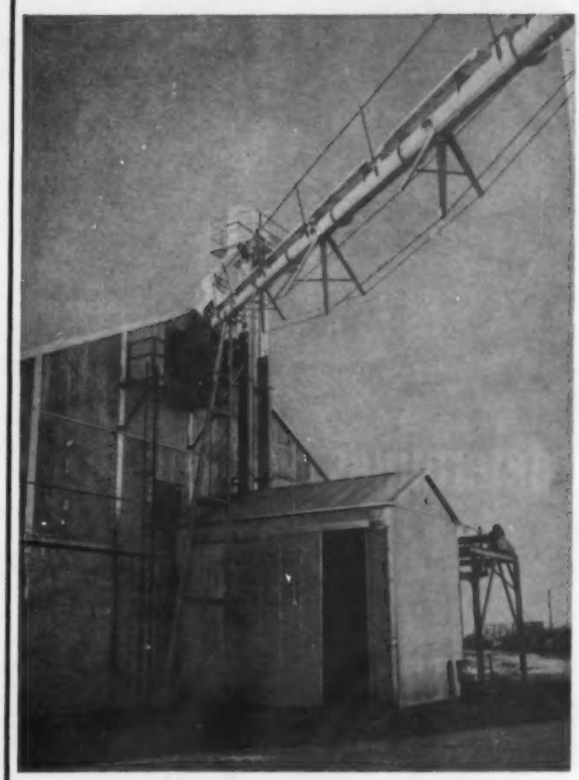

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Cornell Suggestions On Supplemental Zinc Outlined

ITHACA, N.Y. — Suggestions on supplementing chick and turkey rations with zinc were outlined recently by poultry scientists at Cornell University.

The recommendations were included in papers which appeared in the publication "Cornell Feed Service"—one on results of studies on zinc requirements of chicks by L. C. Norris and T. R. Ziegler and the other on the importance of zinc in turkey rations by M. L. Scott.

Results of experiments with practical diets, Dr. Norris said, have shown that in some instances the protein in soybean meal is of such a character as to interfere to a certain extent with the utilization of zinc by the chick. The availability of zinc in soybean meal, it was indicated, may depend upon the degree to which the meal is subjected to heat treatment in the process used for making protein of satisfactory quality. There is some evidence that increasing the heat treatment of soybean protein appears to improve the availability of zinc in it.

"In view of the fact that occasionally at least the use of soybean meal in chick and broiler rations may reduce the availability of the zinc present in the ration," Dr. Norris said, "it seems desirable to supplement these rations with small quantities of zinc, until processes have been developed which will invariably prevent soybean meal from interfering with the utilization of zinc.

"The inclusion of 11.5 mg. of zinc per pound of ration seems sufficient for this purpose. This quantity of zinc can be supplied at an exceedingly modest cost by the addition of approximately 30 gm. of a technical grade of zinc oxide per ton of feed, or 45 gm. of a technical grade of zinc carbonate."

Under conditions of some Cornell experiments, it appears that the zinc requirement for optimum results in poults is at least 65 parts per million. However, it was noted, galvanized equipment was used, and under conditions in which the environment is rigidly free of zinc contamination, the zinc requirement of poults may be somewhat higher.

Dr. Scott went on to tell also of zinc studies with practical rations for older turkeys. Turkeys getting zinc-supplemented feeds showed no enlarged hocks, while many of those on the basal ration did.

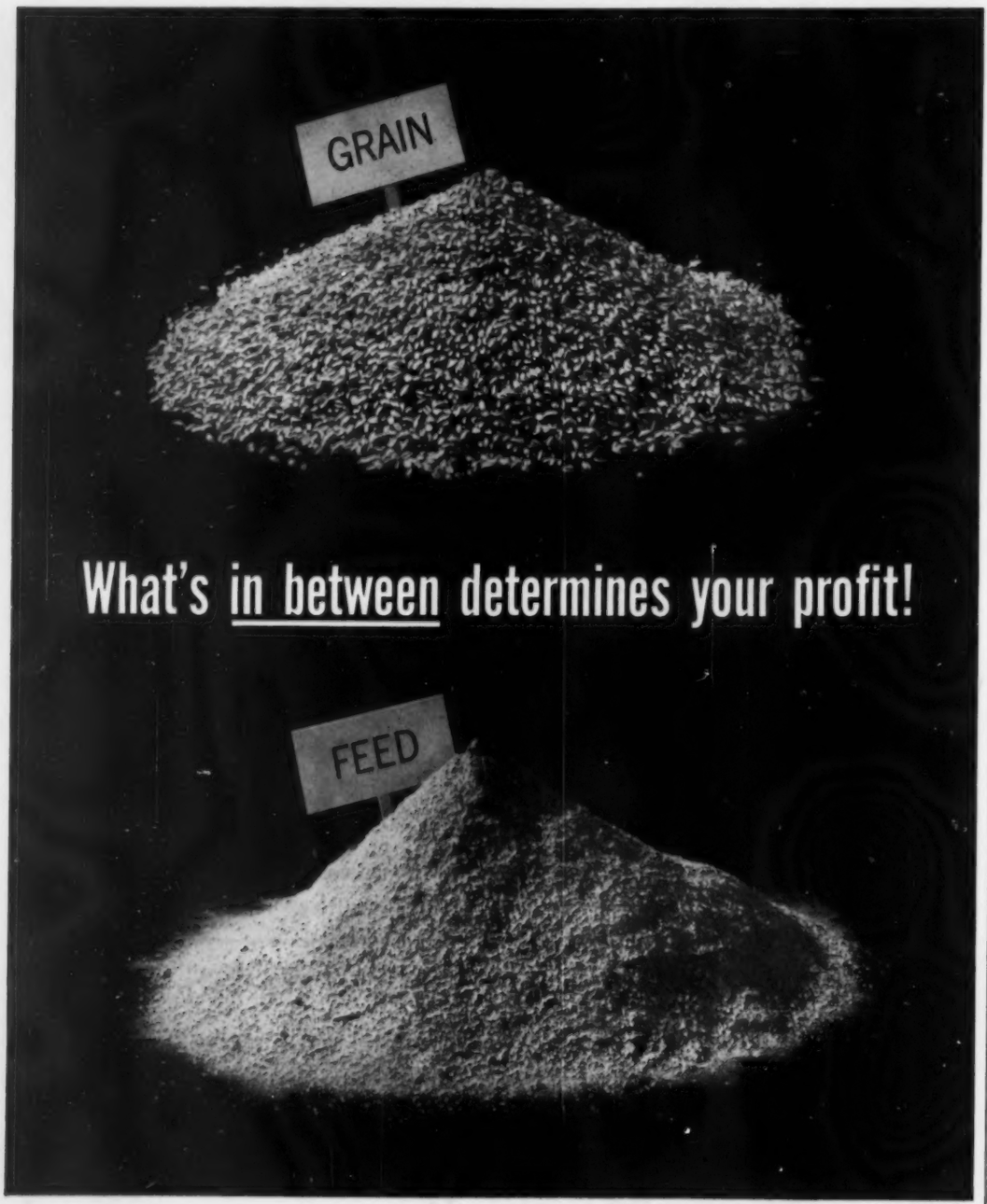
"Practical turkey rations contain about 45 parts per million of zinc," Dr. Scott said. "Thus, it would appear that an additional 20 parts per million would be sufficient. However, at least two factors may modify the estimate of the requirement of zinc in turkeys receiving practical rations — (1) A high level of calcium in the ration can increase the need for zinc, probably by reducing its absorption in the digestive tract in a manner similar to the effect of calcium on manganese. (2) The availability of zinc in some feedstuffs, particularly soybean oil meal, may be limited.

"Since the range of tolerance of poultry for excess zinc is quite wide, there appears to be no hazard to the addition of 55-60 ppm of zinc to insure meeting the requirement. Although zinc chloride was used in many of the experimental studies conducted thus far, Kratzer and associates (California) showed that zinc oxide is equally effective; undoubtedly zinc carbonate also could be used.

"Although no information is available on zinc requirements of breeders, it is considered desirable to add zinc to these rations also."

Howard Whelan

HEADS NEW DEPARTMENT — Howard Whelan is the newly-appointed manager of the egg marketing department being formed by Eastern States Farmers' Exchange (Feedstuffs, April 25). Six New England cooperatives have voted to sell all assets to Eastern States and thus become the foundation for the new department. Mr. Whelan has been the manager of one of these—Brockton Cooperative Poultry Producers, Inc., Avon, Mass.—for the past 20 years.



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K. W. Buxton Gets New Assignment at Purina

ST. LOUIS, MO.—K. W. Buxton, engineering department, Ralston Purina Co., St. Louis, has been named engineer for the company's international division, according to an announcement by David L. Grant, manufacturing vice president. Mr. Buxton will continue to headquarter in the firm's engineering department at the Purina general offices in St. Louis.

Replacing Mr. Buxton as dealer service engineer is R. A. Templeton, formerly of the Staley Milling Co., Kansas City, where he was assistant to the production manager. Before that he worked in the employee relations division for the Quaker Oats Co. in Cedar Rapids, Iowa, and Chicago. He is a graduate of Kansas State University in milling technology.

Mr. Buxton, an electrical engineering graduate of Purdue University, has been with Purina six and a half years.

Contest Winner Named

BUCKSPORT, MAINE—The Martin Grain Co., Wirthmore dealer here, was named winner of the current merchandising display contest sponsored by Wirthmore Feeds, Inc., Waltham, Mass. The firm's display was arranged to coincide with the store's annual "Free Chick Day," when about 5,000 baby chicks were given away to customers. The winner will select prizes from a list of national brand merchandise.

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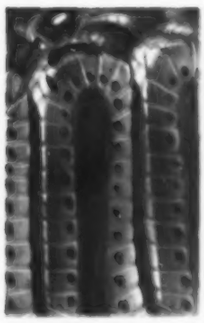

In addition to those reprints shown in this folio—the following are also available:

- Feed and water requirements—Broilers
- Feed and water requirements—Turkeys
- Feed and water requirements—Layers and breeders
- Diagnosis and treatment of blackhead in chickens
- Diagnosis and treatment of blackhead in turkeys
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SERVICE BULLETIN

for members of the feed and poultry industries

Common Respiratory Diseases of Poultry

NAME OF DISEASE	KEY SYMPTOMS	TREATMENT AND CONTROL
CHRONIC RESPIRATORY DISEASE **Cause:** Pleuropneumonia-like organism (PPLO), virus and bacterial agents such as *E. coli* also may be incriminated **How Spread:** Air-borne and direct contact; usually associated with stress conditions (Newcastle disease, bronchitis, vaccination reactions, chilling, deworming, moving, debeaking, caponization, etc.); PPLO transmitted to susceptible chicks through eggs of infected breeding stock	Sniffling; rattling; sneezing; nasal discharge; appetites depressed; marked diarrhea during intestinal phase of disease; no nervous symptoms **Onset:** Slow—as long as 3 weeks after inoculation (under experimental conditions) **Spread:** Slow; symptoms may persist for months **Egg Production:** Reduced 20-30% **Mortality:** Variable; usually low; (as high as 40% in broiler flocks if stress conditions are present); principal loss due to setbacks in weight gains, reduced egg production and increased number of culls	**Treatment:** High levels of PRO-STREP® (100 Gm./ton of feed) will reduce mortality, hasten recovery and help birds maintain feed intake and weight gains; if individual treatment is indicated (especially with older birds) DUOSTREP® Injectable Solution (0.1 to 0.2 cc./lb. of body wt.) may be used to combat mortality, stimulate feed intake and maintain weight gains; VETSTREP® Dust, dusted over infected birds, will help reduce mortality, increase feed consumption **Prevention:** Flock management practices should be checked and corrected; birds should be protected at times of stress with high-level antibiotic feeds (PRO-STREP) or (FLOXAID®)—a combination of vitamins and antibiotics—in the drinking water
FOWL POX **("wet pox")** **Cause:** Virus **How Spread:** Direct contact with infected birds; flies and mosquitoes may spread disease	Loss of appetite; dullness; discharge from eyes and nostrils; cheesy membrane in mouth; difficult breathing—birds suffocate unless false membrane is removed **Onset:** 5-10 days **Spread:** Relatively slow during cold weather; mosquitoes hasten spread during warm weather; symptoms may persist for 3 weeks or longer **Egg Production:** Variable reduction **Mortality:** Usually runs high—due to suffocation	**Treatment:** Remove false membrane from mouths of affected birds; administer fowl-pox or pigeon-pox vaccine to all birds on premises—on advice of poultry pathologist; help stimulate feed consumption with feedings of wet mash, pellets, or rations containing high levels of antibiotics, or antibiotic-vitamin mixtures in drinking water **Prevention:** Vaccination (in areas where disease is prevalent) with either fowl-pox or pigeon-pox vaccine
INFECTIOUS BRONCHITIS **Cause:** Virus **How Spread:** Air-borne; discharge from nose and throat of infected birds; recovered birds may be carriers of virus for 30 days; infection through contamination of feed sacks, equipment and clothing	Chicks sneeze, have hoarse, rattling cough; feed consumption drops sharply; mucus click or tracheal rale when chicks are held; some nasal discharge, watery eyes in chicks; no nervous symptoms **Onset:** Sudden—18-48 hours after exposure **Spread:** Rapid—24-48 hours; symptoms subside in 2-3 weeks **Egg Production:** Drops 10-75%; marked increase of soft-shelled and low quality eggs; poor eggs may be produced for some time after other symptoms of disease have subsided **Mortality in chicks:** Ranges from 5-60% (higher if disease is complicated by C.R.D.) **Mortality in adults:** Low (2%); may be higher if disease is complicated by C.R.D.; increase in number of culls and internal layers	**Treatment:** No effective drug for virus infection; keep flock comfortable (increase brooding house temperature); high-level antibiotic feeds may be used to minimize complications from C.R.D.; if water treatment is more convenient, a mixture of vitamins and antibiotics may be used to advantage **Prevention:** Vaccination* with live, attenuated virus vaccine (spray, water or dust forms) *Certain states regulate or make illegal this procedure—check local regulations.

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NAME OF DISEASE	KEY SYMPTOMS	TREATMENT AND CONTROL
INFECTIOUS CORYZA **Cause:** A bacterium, *Hemophilus gallinarum* **How Spread:** Carrier birds transmit infection; outbreaks may be touched off by stress conditions – drafts, moving, vaccination reactions, excessive dampness, deworming, debeaking, etc.	Foul-smelling secretion from eyes; discharge from nostrils; facial tissues and wattles swollen; sneezing; coughing; difficult breathing; drop in feed consumption; no nervous symptoms **Onset:** Sudden, less than a week after exposure **Spread:** Rapid; birds may recover in 2 weeks, but disease may persist for months (especially mild form) **Egg Production:** Variable drop – but may be extremely high under certain conditions **Mortality:** Variable; may run as high as 50% if complicated by air sac disease (C.R.D.)	**Treatment:** Sulfa drugs for 4 to 5 days in feed or water usually effective; stimulate appetites of flock with high levels of antibiotics in feed or water; flock should be carefully culled, all sick birds isolated or removed from flock **Prevention:** Improved management practices, protection of flock at times of stress will minimize outbreaks
INFECTIOUS SINUSITIS (Turkeys) **Cause:** Pleuropneumonia-like organism (PPLO) believed principal cause **How Spread:** Air-borne and direct contact; stress conditions may predispose to infection; PPLO transmitted to susceptible poults through eggs of infected breeding stock	Shaking of head; discharge from eyes and nostrils; swollen sinuses; feed consumption drops because of impaired vision–birds lose weight rapidly; sneezing; coughing; labored breathing **Onset:** 2 to 3 weeks after exposure **Spread:** Slow–may persist for months unless treated **Mortality:** Low, unless air sac infection or pneumonia complicate disease	**Treatment:** Injection of each infected sinus with 0.4 cc. (100 mg.) of DUOSTREP Injectable Solution (use 16 or 18 gauge needle); help stimulate appetites and maintain weight gains by placing birds on rations containing PRO-STREP at 100 Gm./ton level or use FLOXAID in drinking water **Prevention:** Check management practices; minimize setbacks at times of stress with high-level antibiotic-fortified rations (PRO-STREP), or antibiotic-vitamin mixtures in drinking water (FLOXAID); segregate young birds from older toms and hens; investigate possibility of injecting breeders with DUOSTREP to reduce egg transmission of PPLO
LARYNGOTRACHEITIS **Cause:** Virus **How Spread:** Air-borne; may be carried on equipment or clothing; birds recovered from natural outbreaks may be carriers	Extremely difficult breathing; coughing; rattling; birds may expel blood-tinged mucus **Onset:** Sudden – 6-12 days after exposure **Spread:** Rapid; symptoms subside in two weeks **Egg Production:** Variable drop, 5-15% **Mortality:** Variable; 5-50% or higher **Diagnostic Aid:** No nervous symptoms; bloody, cheesy exudate over larynx; laboratory tests to eliminate possibility of fowl pox and Newcastle disease; virus isolation	**Treatment:** Vaccinate all birds on farm *not* showing symptoms; no drug effective against virus infection; stimulate feed consumption with wet mash, pellets, high-level antibiotic feed or antibiotic-vitamin mixtures in drinking water **Prevention:** Vaccinate replacement pullets 6 weeks of age *or older* on advice of poultry pathologist (if disease is prevalent in area); broilers may be vaccinated at 3-4 weeks of age; vaccinated birds *are not carriers of infection*
NEWCASTLE DISEASE **Cause:** Virus **How Spread:** Air-borne; discharges from respiratory and digestive tracts; virus particles may be carried on equipment, spread by wild birds	Sharp drop in feed consumption; gasping; coughing; rattling; nervous symptoms – incoordination, paralysis, trembling, coma – especially marked in young chicks **Onset:** Sudden – 4 to 14 days after exposure **Spread:** Rapid–symptoms persist for 2 weeks or longer **Egg Production:** Drops to zero in few days; production back to normal in 1-2 mos.; soft-shelled eggs produced **Mortality in chicks:** As high as 90% **Mortality in adults:** Negligible	**Treatment:** No drug effective against virus; to minimize bacterial complications and stimulate appetites–use wet mash, pellets, or high-level antibiotic feedings; addition of vitamins and antibiotics in drinking water may also prove helpful **Prevention:** Vaccination* of chicks with live or dead virus vaccines (intranasal, intramuscular, wing-web, water, spray or dust forms) *Check local regulations covering this procedure.

SERVICE BULLETIN

for members of the feed and poultry industries

ENTERIC DISEASES OF SWINE

DISEASE AND CAUSE	HOW SPREAD	KEY SYMPTOMS	CONTROL AND/OR PREVENTION
HOG CHOLERA **(Virus; may be complicated by bacterium — *Salmonella choleraesuis*)**	Direct contact with infected animals; contaminated feed and watering equipment; faulty handling of live-virus vaccines (vaccination of weak or parasitized animals); exposing susceptible hogs to recently-vaccinated animals (virus can be shed for 3 weeks)	Constipation followed by diarrhea; pigs dull, listless; lose interest in food; weak, stagger; show nervous symptoms **Onset:** Sudden; 5-10 days after exposure **Spread:** Rapid; 7-14 days **Temperature:** High; 106°–107°F.* **Mortality:** High; (especially in growing hogs) **Diagnostic Aid:** Virus isolation; laboratory inoculation of test animals **Normal temperature of the hog is approximately 102°F.*	**No effective treatment;** antibiotics and sulfa drugs may help control secondary bacterial complications; serum may be helpful during early stages of disease **Prevention:** Vaccination program under veterinary supervision recommended as prophylactic measure; (vaccinate 2 weeks before or 2 weeks after weaning or castration); quarantine pigs exposed in transit or in stockyards . . . keep separated from susceptible herds for at least two weeks.
TRANSMISSIBLE GASTRO-ENTERITIS **— TGE —** **(Large virus)**	Primarily by bowel discharges containing infectious agent; disease considered highly contagious among newly farrowed pigs; disease also may be air-borne, especially in close quarters	Scouring (some vomiting); profuse watery diarrhea; feces yellow-green, almost white in color; animals are dehydrated, show increased thirst; pigs may continue to eat or nurse but lose weight rapidly; rapid breathing **Onset:** Sudden; 18-24 hours after exposure **Spread:** Rapid; 2-3 days **Temperature:** Little or no rise **Mortality:** As high as 100% in pigs under 14 days of age; 1-2% in pigs 3 weeks of age and older; mature animals show mild, or no symptoms, no mortality **Diagnostic Aid:** Virus isolation and laboratory inoculation of susceptible hogs	**No effective treatment;** high-level antibiotic feed supplements or sulfa drugs may minimize secondary bacterial complications **Prevention:** move and scatter sows at farrowing time — keep sows and their litters segregated for 3 weeks (recovered sows pass on immunity to young—disease rarely occurs second year); do not introduce new stock during farrowing season; quarantine new stock for one week *or longer;* in extreme cases interrupting breeding so that no pigs are farrowed for 3 months will help bring condition under control
SWINE DYSENTERY **(a *Vibrio*)**	Spread mainly through bowel discharges containing vibrios; "recovered" sows or boars may be carriers of infection without showing symptoms; disease most prevalent in sales barns and stockyards	Frequent passage of watery feces containing shreds of mucus and blood ("rice-water stools"); young pigs most severely affected; loss of appetite, prostration, marked loss of weight; survivors unthrifty **Onset:** Variable, 7-9 days or longer after exposure **Temperature:** Little or no rise **Mortality:** 25% or higher, especially in suckling pigs and untreated herds **Diagnostic Aid:** No rise in temperature; absence of nervous symptoms (observed in hog cholera and edema disease)	Quarantine additions to herd for 2-3 weeks; antibiotic supplementation of feed or drinking water will help control losses, reduce severity of outbreak; in severe cases injection of streptomycin or dihydrostreptomycin sulfates may be indicated by veterinarian; recurrences are common; it may be advisable to treat herd until market time; may be necessary to vacate contaminated feeding grounds for 6-12 months

DISEASE AND CAUSE	HOW SPREAD	KEY SYMPTOMS	CONTROL AND/OR PREVENTION
BACTERIAL ENTERITIS **(various *Salmonella* types; *S. cholerasuis* is important secondary invader in hog cholera outbreaks)**	Infective organisms present in bowel discharges; poor sanitation, faulty or inadequate rations may predispose to infection, especially in young animals; bacterial enteritis may be secondary complication associated with virus infections (such as hog cholera) or when animal is under stress	Weakness, diarrhea, failure to gain weight **Onset:** Variable; may depend on natural resistance of animal **Spread:** Fairly slow; once bacteria pass through one or more animals disease may spread more rapidly to others in herd **Temperature:** Slight rise, possibly one or two degrees **Mortality:** Variable; outbreaks in suckling pigs may, however, result in relatively high death rate **Diagnostic Aid:** Laboratory isolation and identification of causative organisms; eliminate possibility of primary virus infection	**Control:** Use of rations containing 100 Gm. of PRO-STREP® per ton of feed or VET-STREP® Granules (or AV-FORMULA® to the drinking water **Prevention:** Sanitation and adequate diet principal aids to prevention; animals should be well fed, well housed and protected against undue environmental stressors
EDEMA DISEASE OF SWINE† **— Gut Edema —** **(Cause unknown, may be toxic factor produced by *Escherischia coli*)**	Means of spread in doubt; outbreak may occur following change in feeding or other management practices; hog cholera postvaccination reaction (2-3 weeks) may "trigger" outbreak	Sudden, unexplained deaths in apparently healthy animals may be first indication of disease; young pigs 9-14 weeks of age usually affected; nervous symptoms include unsteady gait, staggering, paralysis, incoordination and eventual paralysis; swelling of eyelids; alteration of voice **Onset:** Sudden **Spread:** Rapid, but losses usually stop in 4-5 days **Temperature:** Normal **Mortality:** Moderate to severe, ranges from 4-40%; may go as high as 90% **Diagnostic Aid:** Postmortem examination needed to confirm diagnosis	**Control:** Epsom salts [60 Gm. (2 oz.) per hog in a thin slop] **Prevention:** Immediately following stress conditions or change in environment, feed a thin slop containing 2 oz. of Epsom salts per pig once weekly for 3 weeks
ERYSIPELAS† **(a bacterium, *Erysipelothrix rhusiopathiae*)**	Causative organism (excreted by infected animals in feces and occasionally urine) found in contaminated pastures; animals may be carriers and spread disease; sales yards, pork trimmings in garbage, and rarely, contaminated fish product (meal) also incriminated as sources of infection	Pigs are listless, refuse to eat; walk with stiff gait; some vomiting and diarrhea; in acute septicemic form sudden deaths, with no apparent symptoms; irregular red-purple patches (diamond-shape) appear on the skin on the second or third day of the outbreak **Onset:** Variable **Spread:** Variable; only few animals may be sick at outset of disease, infection may be acute in nature or run chronic course (with arthritis and heart lesions) **Temperature:** High, 105-110° F. **Mortality:** Variable; may go as high as 50 or 100% in severe, untreated outbreaks **Diagnostic Aid:** Postmortem findings and laboratory isolation and identification of causative organism	**Control:** Injections of penicillin, preferably under the direction of a veterinarian **Prevention:** Antierysipelas serum may be used alone, or in conjunction with penicillin to protect susceptible animals during outbreak; use of erysipelas vaccine (ERYSIPOGEN®) on farms where disease is problem recommended as successful prophylactic measure

†These conditions—edema disease of swine and erysipelas—while not considered enteric diseases, are included in the chart because of their related symptoms and/or lesions and the increasing importance of these diseases to the swine grower.

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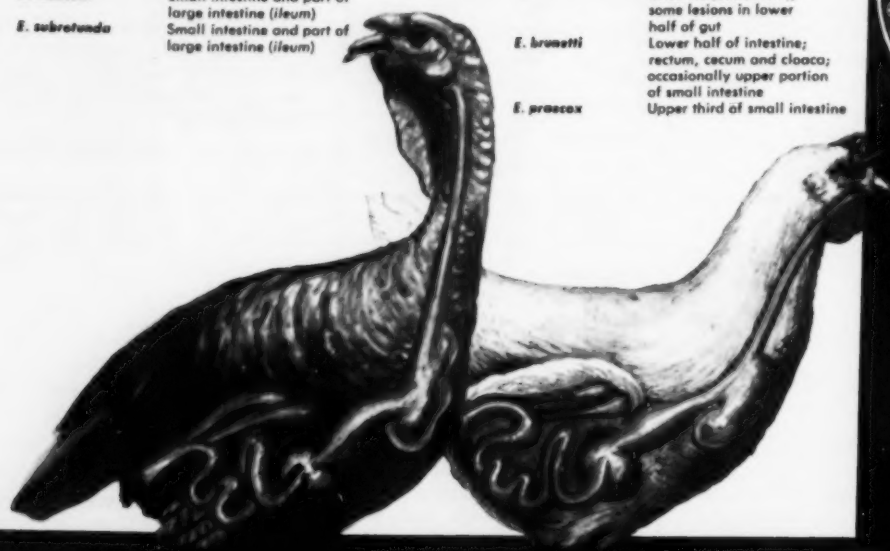
TURKEY COCCIDIA

Species	Region of Intestine Affected
E. meleagridis	Cecum
E. meleagrimitis	Upper third of small intestine (*jejunum, duodenum*)
E. dispersa	Duodenum, small intestine and cecum near bifurcation
E. gallopavonis	Lower half of intestine, cecum
E. adenoides	Lower half of intestine, rectum, cecum
E. innocua	Small intestine and part of large intestine (*ileum*)
E. subrotunda	Small intestine and part of large intestine (*ileum*)

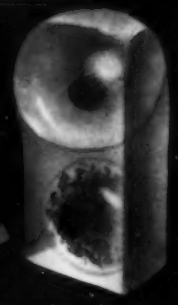
CHICKEN COCCIDIA

Species	Region of Intestine Affected
Eimeria tenella	Cecum
E. necatrix	Middle third of small intestine; occasionally cecum
E. acervulina	Upper half of small intestine
E. mitis	Upper half of small intestine
E. maxima	Middle and lower half of small intestine
E. hagani	Upper half of small intestine (duodenum); some lesions in lower half of gut
E. brunetti	Lower half of intestine; rectum, cecum and cloaca; occasionally upper portion of small intestine
E. praecox	Upper third of small intestine



1. OOCYSTS
These microscopic, egg-like bodies are passed in the droppings of birds infected with cecal or intestinal coccidiosis. A field of coccidial oocysts, greatly magnified, is shown above.

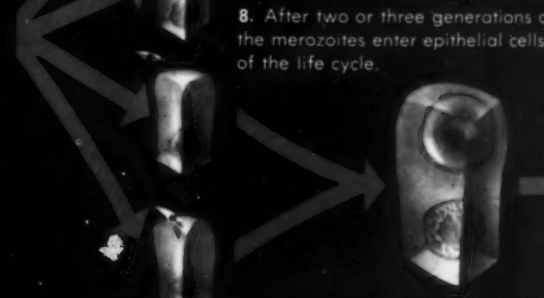
2. SPO



5. Each
from the
the wall
and dev
enclosin

6. The nucleus divides and the process is repeated until a considerable number of nuclei have been formed (first generation schizont).

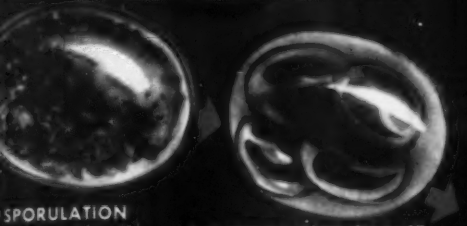
8. After two or three generations of asexual di
the merozoites enter epithelial cells and start th
of the life cycle.



Some of the merozoites develop into male cells
Other merozoites produce female cells or macro

7. The nuclei contained in the schizont develop into sickle-shaped *merozoites* which lie parallel to each other in formed groups that resemble sections of an orange. The merozoites then break out of the epithelial cells and invade new cells in the intestines to form a *second generation* of *schizonts* and *merozoites*.*

COCCIDIAL LIFE CYCLE

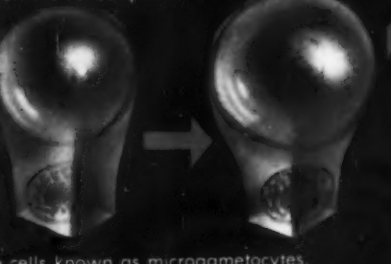


SPORULATION

2A. SPORULATED OOCYST
After 24 to 48 hours, in favorable conditions—warmth, moisture and air—four spores develop within the oocyst. Each of the four spores, in turn, forms two banana-shaped bodies called *sporozoites*.

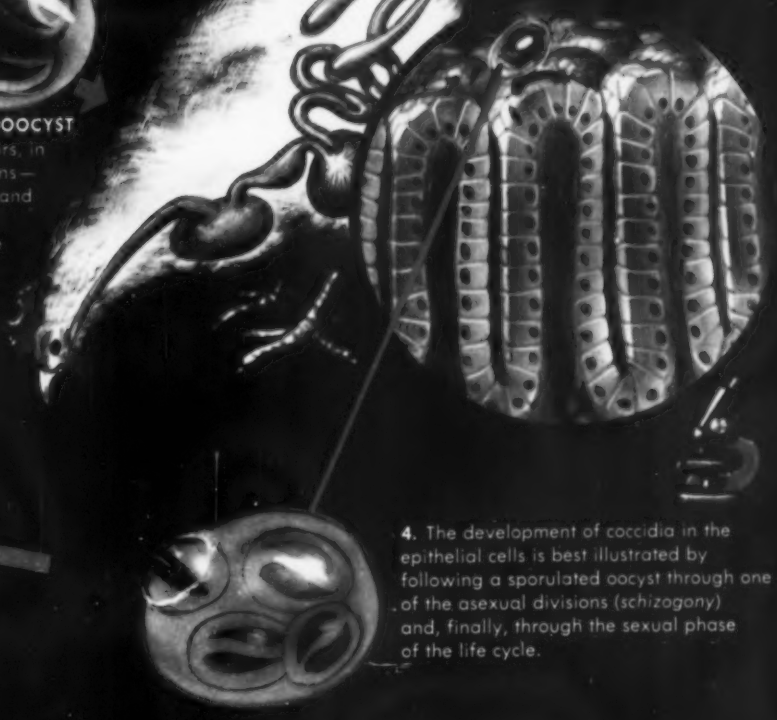
Each sporozoite released
m the sporocyst penetrates
e wall of an epithelial cell
d develops into a rounded body
closing a nucleus (*trophozoite*).

ual division, certain of
art the sexual phase



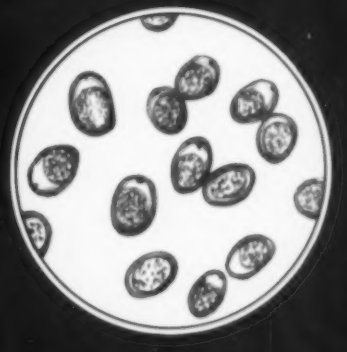
cells known as microgametocytes.
macrogametocytes.

3. Ingestion of ripe or sporulated oocysts brings about the first phase of infection in the bird. Enzymes in the digestive tract (pancreatic juice, in particular) dissolve the protective oocyst wall (*excystation*). The released sporozoites then invade the epithelial cells of the mucosa of the digestive tract.



4. The development of coccidia in the epithelial cells is best illustrated by following a sporulated oocyst through one of the asexual divisions (*schizogony*) and, finally, through the sexual phase of the life cycle.

9. The union of the one male cell, or *microgamete*, and one female cell, or *macrogamete* (fertilization), results in the formation of an oocyst which is then passed from the body of the bird, completing the coccidial life cycle.



Coccidiostatic agents such as GLYCAMIDE™ (glycarbylamide), S.Q.® (sulfaquinoxaline) and NICARB® (nicarbazin) are primarily effective against the second generation of schizonts and merozoites. Since sporozoites and first generation schizonts and merozoites are not affected, feeding of coccidiostats permits the development of immunity to reinfection.

BLACKHEAT DISEASE

in turkeys

SYMPTOMS Poults 8-16 weeks usually affected; weakness; droopiness; marked loss of appetite; watery, sulfur-colored droppings; head parts may turn black; mortality averages 50%.

LESIONS* Walls of ceca swollen, marked with open sores or ulcers; some peritonitis if ulcers perforate cecal wall; hard grayish-yellow cecal core with cheese-like consistency, sometimes streaked with blood; liver lesions in form of circular, yellowish-green depressions, ½ inch or more, in diameter.

in chickens

SYMPTOMS Considered stress disease; may be "triggered" by vaccination reactions; exposure to adverse weather conditions, contaminated range, etc.; symptoms include drowsiness; marked loss of appetite; yellowish-brown, foamy droppings; (passage of sulfur-colored droppings—almost always a sign of blackhead infection in turkeys—may not be observed in chickens).

LESIONS* Cecal cores may be confused with plugs seen in pullorum or cecal coccidiosis; peritonitis—where cecal wall perforates—resembles C.R.D. lesions; liver lesions not as pronounced or seen as often as in infected turkeys; pin-point necrosis in liver, lesions resemble those associated with fowl cholera and infectious avian hepatitis.

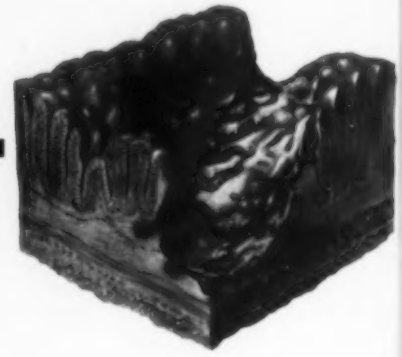
*The field diagnosis of blackhead should be confirmed by a poultry pathologist as soon as possible. Treatment of blackhead is best carried out under the direction of a veterinarian.

● Blackhead, once considered primarily a disease of turkeys, is increasing in importance as a serious condition of broiler and replacement flocks.

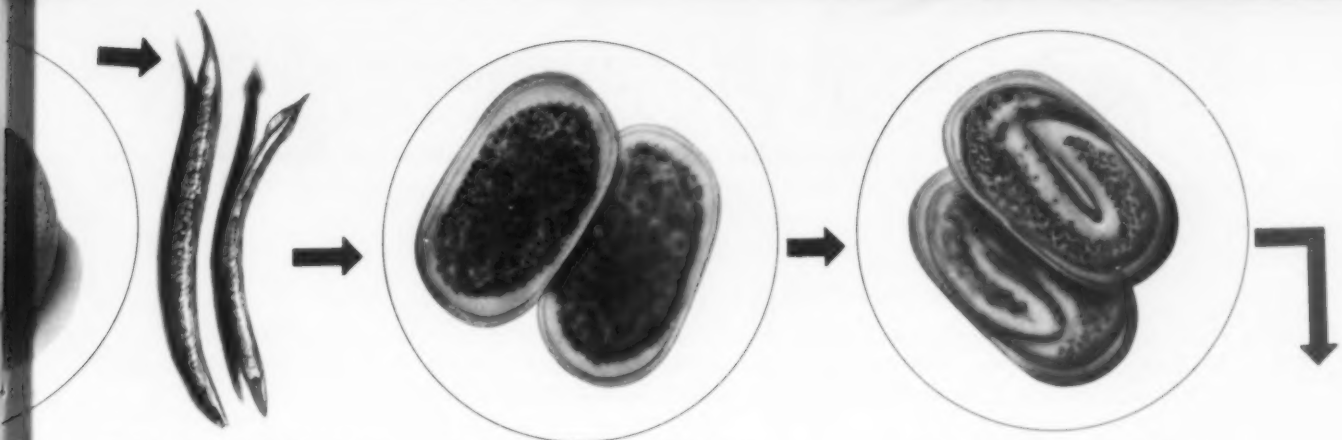
● The protozoan parasite **(Histomonas meleagridis)** responsible for blackhead in turkeys and chickens; considered capable of spreading the infection when passed in the droppings of diseased or carrier birds. However, the chief source of infection is the embryonated egg of the common cecal worm which, after being passed by an infected chicken or turkey, is capable of surviving in the soil for periods up to 36 months.

BLACKHEAD

● A liver showing the typical circular, yellowish-green lesions associated with blackhead infections. These liver and cecal lesions almost always are observed in diseased turkeys. However, the lesions in affected chickens are usually confined to the ceca.



● From the ceca the protozoa invade the bloodstream and are carried to the liver. However, cecal droppings of infected birds carry the protozoa and these contaminated droppings (and cecal worm eggs) are responsible for completing this phase of the blackhead life cycle.

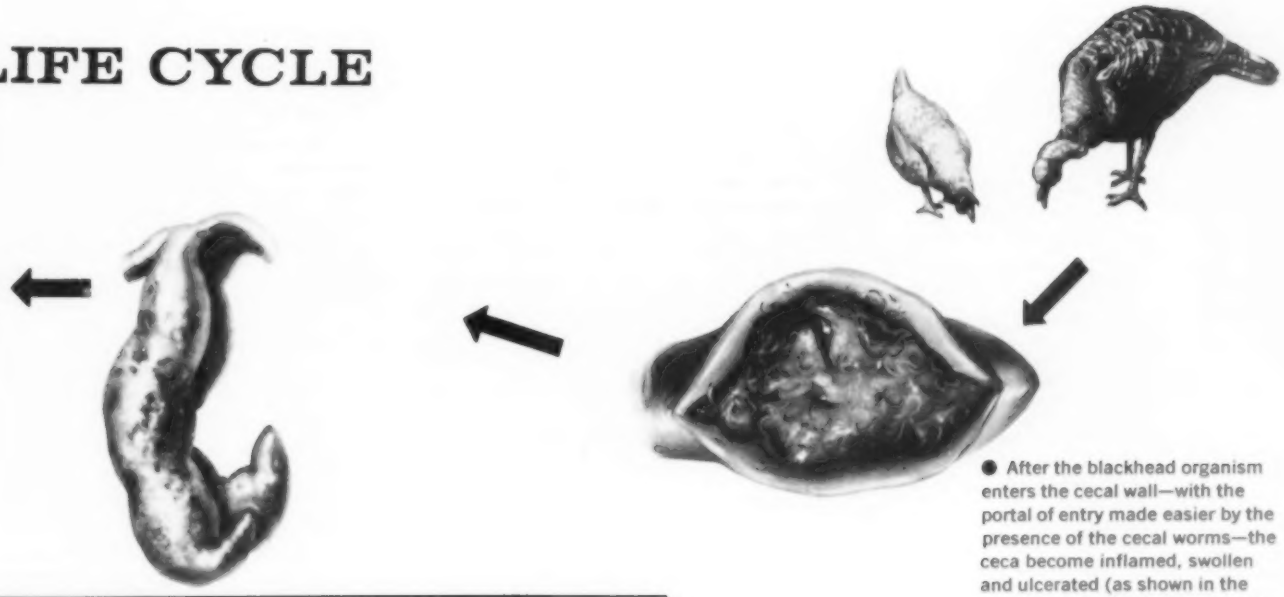


● Shown above are the male and female cecal worms (approximately 10 times their actual size). Some research workers feel that the invasion of and subsequent damage to the cecal wall by these parasites helps initiate the blackhead infection. The means by which the blackhead protozoa enter these parasites is unknown.

● The eggs of the cecal worm, when passed by a bird infected with blackhead, usually harbor the blackhead organisms. However, incompletely developed eggs **are not capable** of causing blackhead disease.

● After approximately two weeks outside the host's body, cecal worm eggs develop into the larval form shown above.

LIFE CYCLE



● After the blackhead organism enters the cecal wall—with the portal of entry made easier by the presence of the cecal worms—the ceca become inflamed, swollen and ulcerated (as shown in the drawing on the left). The mucous lining becomes thickened and is covered with a foul-smelling, yellowish-green exudate, with a cheese-like consistency.

PREVENTION of blackhead infections calls for: range rotation, screened or slatted floors, and wire platforms for feed and water hoppers to reduce the exposure of susceptible birds to the embryonated eggs of the cecal worm, the periodic feeding of phenothiazine to reduce the cecal worm population and feeding continuously low levels of antiblackhead drugs such as HEPZIDE® (nithiazide). In chicken flocks, where the disease is apt to be "triggered" by stress conditions, the prophylactic feeding of antihistomonad drugs and the cushioning of setbacks at times of stress are indicated.

Outbreaks of blackhead may be treated by the use of HEPZIDE Soluble Powder in the drinking water for seven to ten days. The use of prophylactic feed levels of HEPZIDE after the disease has been curbed will depend on local farm conditions.

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SERVICE BULLETIN

for members of the livestock and allied industries

Prevention of Bloat in Cattle

Bloat, the distention of the rumen and reticulum due to an accumulation of gases, is a 40- to 45-million dollar problem to producers of dairy cattle, beef cattle and sheep. The increase in incidence of bloat has been coincidental with the increased use of improved pastures and, especially, legume acreage.

▶ The Cause of Bloat

Interference with the normal mechanism for the ejection of gas from the ruminant's stomach is believed responsible for most, if not all, cases of bloat. At least five theories* as to the possible cause, or causes, have been advanced:

1. **Tickle Theory** (physical deficiency) —The belching mechanism is stimulated by the scratching of the walls of the reticulum and rumen by coarse material in the feed. Legumes, relatively high in moisture and low in fiber, do not provide adequate stimulation to permit the escape of formed gases. (Cattle fed cured hay on grass pasture—including legume crops—are not as apt to bloat as grazing animals.)

2. **Toxic Theory** —Certain grasses contain toxic materials—flavones—that have a paralyzing effect on the muscles of the rumen and reticulum and interfere with belching. (The hydrogen cyanide toxin theory is no longer considered valid by most research workers).

3. **Saponin Theory** —These substances may adversely affect the surface tension of the rumen contents so that the gases of fermentation do not rise freely to the surface of the paunch. The result is a frothy, foamy type of bloat. (Saliva, which is more freely produced by the salivary glands as a result of the stimulation of the rumen by coarse feed and the normal process of rumination, can prevent the gases of fermentation from becoming entrapped as foam in the contents of the rumen).

4. **Feed Density Theory** —Legume grasses form more compact masses, more dense than fermenting rumen contents. The boluses sink to the floor of the rumen and reticulum and (a) either raise the fluid level so that the opening is covered—preventing the escape of gases, or (b) weigh the stomach down and make it more difficult for the release of gases from the dome of the paunch.

5. **Microbial Theory** —Changes in rumen microflora as a result of various feeding practices may contribute to the cause of bloat. This theory prompted the studies conducted by Barrentine and his co-workers[1] in the prevention of bloat in cattle on legume pasture through the feeding of antibiotics.

While there is still some indecision as to the actual cause of bloat, most authorities are in agreement on one important point. The first weeks of grazing on lush grasses during the prebloom stage (especially on leguminous crops such as alfalfa, Ladino, white, red or Dutch clover) are marked by an increased number of bloat cases. While the incidence subsides somewhat during the summer months, when grasses are more mature, another rash of cases is noted in the fall when cool weather and increased rainfall stimulate the growth.

Other factors that may be considered include allergic reactions, and an increased predisposition to bloat passed from a susceptible sire or dam to its offspring.

▶ The Treatment and Prevention of Bloat

Treatment of bloat in cattle ranges from emergency tapping to drenching, or injection into the rumen of antifoaming or surface-active agents such as lecithin, methyl silicone, soybean oil, turpentine and detergents.

Preventive measures also run the gamut. They include pasture management (the use of mixed pasture, in particular); feeding of supplemental portions of nonleguminous roughage to cattle on pasture (rack-feeding of hay); the feeding of hay or straw before turning cattle out to pasture; and the spraying of surface-active agents on bloat-producing pastures.

Barrentine's work[1] with penicillin presented the first practical breakthrough in bloat prophylaxis. It was reported[2] that: "Penicillin, in extremely small amounts, has prevented bloat in two years of testing at the Mississippi Experiment Station . . . this discovery that penicillin will prevent bloat opens a promising lead to solving a problem which has distressed cattlemen and baffled scientists for several decades."

Because of his interest in the possibility of rumen bacteria contributing to the cause of bloat, Barrentine tested the action of several antibiotics—chlortetracycline, oxytetracycline, streptomycin, bacitracin and penicillin. However, penicillin was the only antibiotic that "prevented bloat when a single dose of 300 mg. or less was given . . . Single doses of 25 mg. of procaine penicillin gave good protection from bloat in yearling steers. Bloat was prevented for 1½- to 3-day periods by a single dose of 50 mg. Older steers, weighing about 900 lb., required from 50 to 75 mg. of procaine penicillin to prevent them from bloating."[1]

"The fear of bloat is [perhaps] the greatest deterrent to pasture development programs."[5] Perhaps the judicious use of procaine penicillin will aid in the full utilization of bloat-inducing pastures until further investigations reveal the exact cause of this baffling and troublesome condition—"more baffling and troublesome than any other one of the common noninfectious diseases."[5]

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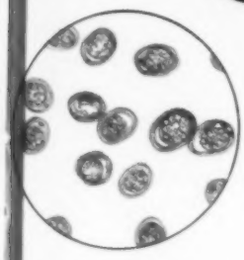
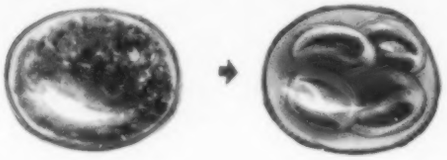
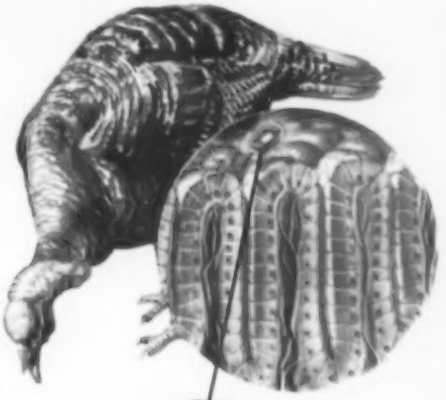
for members of the feed and poultry industries







Coccidiosis in Turkeys

There are two species of coccidia, *Eimeria meleagrimitis* and *E. adenoeides*, capable of producing clinical outbreaks of coccidiosis in turkeys. However, five other species —*E. meleagridis, E. dispersa, E. innocua, E. subrotunda*, and *E. gallopavonis*—have been identified in turkeys. Infection with one or more of these species must be considered in establishing a diagnosis of coccidiosis.

TRANSMISSION:

One coccidial oocyst is capable of producing as many as 500,000 eggs before completing its life cycle. One diseased bird, during the course of infection, can pass in its droppings from 50 to 60 million oocysts.

Within 48 hours, in the presence of warmth, humidity (and oxygen), the oocysts sporulate, or divide, and become infective for other birds. Oocysts that fail to sporulate are noninfective.

Coccidiosis is essentially a filth-borne disease. Transmission occurs when a susceptible poult ingests litter, feed or water contaminated with sporulated oocysts.

SYMPTOMS:

Within two to three days after an infective dose has been swallowed by a susceptible bird there is a drop in feed consumption. Sick poults are droopy, huddle for warmth, and are rough in appearance. Some diarrhea may be present and the loose droppings are occasionally spotted with blood or shreds of mucus from the damaged intestinal wall. Mortality is usually low but occasionally, in untreated flocks, may be quite severe. A serious after-effect of coxy outbreaks *is a rapid loss of weight* in affected birds.

POSTMORTEM FINDINGS:

Lesions associated with *E. meleagrimitis* infection are confined to the small intestine. The gut is usually filled with a whitish, watery fluid.

E. adenoeides infections are limited to the lower part of the gut. The ceca and rectum may be dilated and thickened as a result of the infection.

DIAGNOSIS:

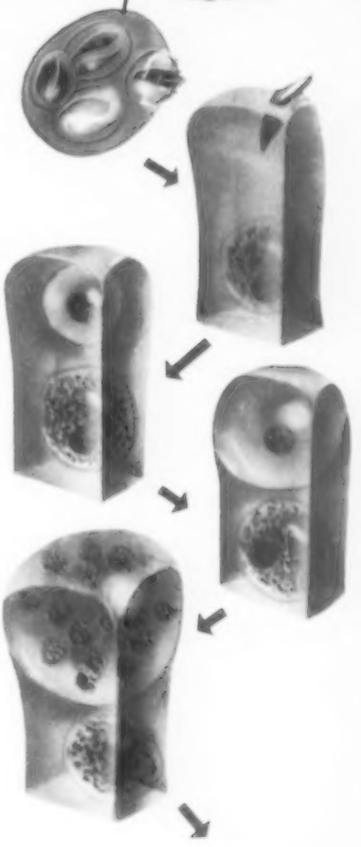
Symptoms and lesions of coccidiosis may be confused with other turkey diseases such as bluecomb and hexamitiasis. A laboratory examination is advised in order to eliminate the possibility of intercurrent infections.

TREATMENT:

The drug selected for the treatment of turkey coccidiosis should be active against the two pathogenic species. And, because of the difficulty in promptly spotting an outbreak, it is also desirable to select a drug with a range of activity that extends from 72 to 96 hours. S. Q.® (sulfaquinoxaline) can be administered at therapeutic levels in the feed or drinking water. The manufacturer's directions for the use of sulfaquinoxaline or other coccidiostats should be closely followed for best results.

PREVENTION:

The continuous feeding of rations containing low levels of a coccidiostat, such as sulfaquinoxaline, will help prevent clinical as well as subclinical infections in growing poults. For best results the coccidiostat should be fed during the time the birds are closely confined, especially during the brooding period. Medication may be continued for seven to ten days after the flock is transferred to the range to reduce the danger of an outbreak following moving of the flock.



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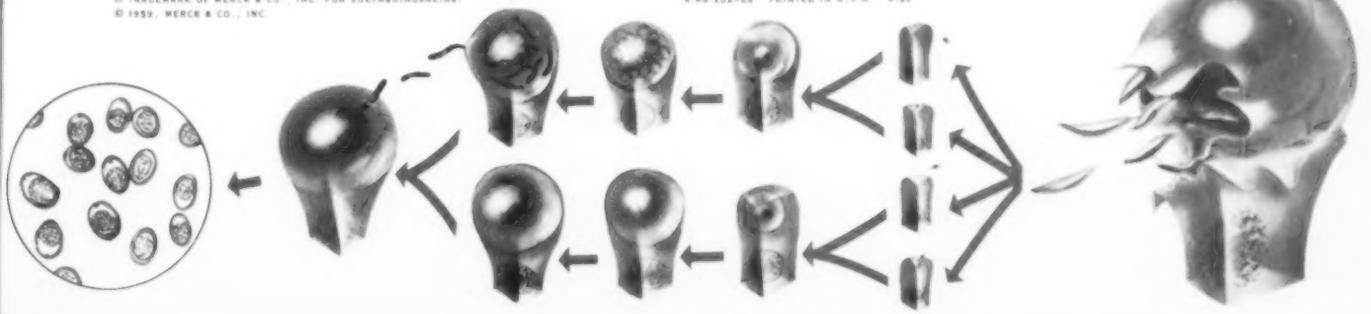

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Early-Farrowed Pigs Use Less Feed in Iowa Tests

AMES, IOWA—Winter and early-spring-farrowed pigs required about 25-lb. less feed for 100 lb. of gain on full feed in spring and summer tests in Iowa than did summer and fall-farrowed pigs on similar fall feed tests, Dr. Ralph Durham, animal husbandman at Iowa State College, reports. (Dr. Durham has just recently left for a position at Texas Technical College.)

The difference between the spring and fall feeding results is based on records of more than 2,000 boars and barrows at the Iowa boar testing station near Ames during the past three years, he said. Numbers of pigs fed in these tests were about equal, fall and spring.

Pigs farrowed in February and March were started on the spring tests from March and April to May 10. The tests were completed and barrows sold on the market from June through early August. The fall tests with summer and fall-farrowed pigs started in October and November. These pigs finished the tests in December, January and February.

The mean of the yearly averages of pounds of feed required for 100 lb. of gain in the three spring tests was 290 lb. The mean of the yearly averages for pigs in the fall tests was 315 lb. of feed for 100 lb. of gain. Thus, feeding winter and early-spring-farrowed pigs in spring and summer resulted in an average 7% saving in feed per pound of gain as compared to feeding summer pigs in the fall and winter, Dr. Durham said. He pointed out that this additional advantage of summer-fed (or winter-farrowed) pigs has not been clearly recognized in the past.

Market Advantage

Francis Kutish, agricultural economist at Iowa State College, pointed out that the normal seasonal highs in market hog prices already give the winter and early spring-farrowed pigs a market advantage. The seasonal low price for market hogs usually comes in the October-to-April period when the late spring-farrowed, summer-farrowed and fall-farrowed pigs are going to market, he said.

The feed efficiency disclosed in the spring feeding results, Mr. Kutish said, may further encourage winter and early spring farrowing for the summer market. "However," he warned, "the farmer still has to consider other factors in making his decision on farrowing dates. These include availability of labor at various seasons, the quality of the farm operator's swine housing and equipment, his disease control program and his own management skills."

The sow that farrows in the summer, Mr. Kutish pointed out, takes care of her pigs on pasture without much human help. This may be important to farmers who cannot get enough help to meet their summer labor load. However, there are some labor requirements in raising fall-farrowed pigs that are greater than the corresponding requirements for spring pigs, he said. For instance, it takes more labor to clean the lots and houses and more bedding for the pigs on finishing feed in fall and winter. Pigs on feed in spring and summer require less cleaning labor and less bedding.

Multiple Farrowing

Dr. Durham said it would appear that the farmer practicing multiple farrowing can "well afford" to raise early pigs from the standpoints of feed efficiency and market price. If suitable low-cost housing can be developed to lower the capital outlay for early pigs, this advantage could be augmented, he said.

Dr. Durham said all pigs in these tests received the same high-energy, balanced and reinforced Corn Belt fattening rations. They were housed both summer and winter in the same quarters — white-painted plywood shelters extending north and south the length of a concrete slab with the open side of the shelter to the East.

In 1956, the early pigs, marketed in the summer, ate an average of 292 lb. of feed per 100 lb. of gain. The fall pigs, marketed in the winter, took 303 lb. of feed for 100 lb. of gain. In 1957, the spring pigs used 294 lb. of feed to produce 100 lb. of live weight. The fall pigs used 319 lb. that year. In 1958, the spring pigs took only 285 lb. of feed for 100 lb. of gain, but the fall pigs required 323 lb. These fall pigs were marketed in January and February, 1959.

Rates of daily gain failed to show a seasonal difference, Dr. Durham said. There was a difference in meatiness, however. Pigs on the fall and winter feeding tests averaged about 3% more lean meat in their carcasses than the early pigs on spring and summer tests. Loin-eye muscle averaged about 3.7 sq. in. in area for the fall-tested late pigs. The spring-tested pigs averaged only 3.4 sq. in. of loin-eye area.

'Push-Button' Poultry Breeder Farm Planned

DOUGLAS, GA.—A modern push-button poultry breeder farm, said to be the first of its type in the U.S., will be built in Coffee County on 24 acres of land near here.

The project will involve an expenditure of $308,000. Owner is Fairview Farm, Inc., a newly-formed corporation composed of Charles Anderson, Heyward Brawner, Henry Milhollin and Andrew Tanner.

The Fairview Farm will construct eight breeder houses, each 43 ft. wide and 400 ft. long, an office building and a dwelling house for the manager. The breeder houses with equipment will cost $35,000 each, and the eight will house 50 000 breeder hens.

The project will be completed during the summer and will be leased to Chemell Hatcheries, Gainesville, Ga.

The farm will produce hatching eggs for broiler type chicks.

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Economist Sees Need for Billion-Bushel Soybean Crop; Urges Killing P.L. 480

CHICAGO—A University of Illinois agricultural economist said here recently that it is possible "that the need for the meal from a crop of 1 billion bushels of soybeans is actually less than a decade away."

Dr. T. A. Hieronymus, speaking on "The Competitive Position of Soybeans" before the bi-monthly luncheon of the Commodity Club of Chicago, pointed out that if meal production increases are continued in the decade ahead at the same rate they have been in the decade ending, "it is clear that a shortage of high-protein concentrates will remain."

"Nearly all of the meal is used as a livestock feed and about 90% of the oil is used as human food. These two are joint products, broadly and generally equal in value. The one product cannot be made without the other, so we are caught on the horns of a dilemma," he said. "Differences in market structure for the joint products make an evaluation of the competitive position of soybeans rather difficult. Evaluation is further complicated by the distortion that has been developed by the oil surplus disposal program. The effect of the latter has been to aggravate the surplus problem.

"The fundamental strength of the meal situation is world-wide. In the world's food supply, carbohydrates and fats are moving into an area of abundance. An increasing proportion of the world's population is moving out from under the spectre of famine. There is an agricultural revolution in progress that has enabled production to increase at a rate even faster than population," Dr. Hieronymus said.

Soybean Meal Expansion

"Production and use of soybean meal in the U.S. have expanded very rapidly during the past 20 years. Production of other high-protein concentrates has increased very little, and production per protein-consuming animal unit is at the same level it was 20 years ago. Prices of high-protein concentrates have increased relative to feed grains in recent years. Dramatic examples of market growth have been provided during the past two years. In the year beginning Oct. 1, 1957, about 12% more soybean meal was used than during the preceding year and it was used at 12% higher prices. During the first half of the year beginning Oct. 1, 1958, about 20% more soybean meal was used at prices moderately higher than during the year before," he said.

"This increase in protein concentrate consumption per animal-unit has been associated with a substantial and continuing increase in output per 100 lb. of feed fed. This increased productivity is especially notable in swine and poultry. Increased usage of high proteins has been greatest for these two classes of animals.

"Wells, in 'The Expanding Market for Soybean Meal,' estimated that substantial deficits in protein still remain. He figured that in 1955 about 198 lb. of high-proteins were needed per grain-consuming animal-unit and that the amount fed was only about 133 lb., for a deficit of 33%. Since 1955, consumption per animal-unit has increased only moderately."

Feed Grain Output

Switching to the subject of production of feed grains, Dr. Hieronymus said in part "As everyone knows, feed grain production has been increasing and substantial quantities of wheat are being grown in excess of requirements. In the long run, either wheat will have to be moved into animal feed use or land will be taken out of wheat and put into feed grain production. Each increase in the latter has resulted in more than a proportionate increase in the need for high-protein concentrates. This is true because the protein content of forage is greater than that of feed grains; as supplies of the latter increase in relation to forage, new deficits are created."

Expanding on the market potential created by such deficits, Dr. Hieronymus said: "Livestock numbers will increase at about the same rate that feed grain production is stepped up. During the past 10 years, the production of feed grains has increased at a rate of about 2.6% per year. If this rate is maintained, five years from now somewhat more than a 30% increase in protein supplement will be needed. Because soybean meal makes up only about 50% of the protein supplements and production of the others is increasing only slowly, soybean meal production will have to be about doubled so as to maintain current rates of feeding of protein supplements.

"Substantial inventories of feed grains have been accumulated during the past 10 years under price support programs," he said. "If, in the years ahead, these supplies are used, then surely large amounts of proteins will be needed to supplement the grains fed.

"When all three of these market growth factors—(1) current protein deficits; (2) increased feed grain production and (3) liquidation of government owned inventories—are put into combination," said the economist, "our estimate of the soybean meal market potential becomes positively fantastic. If meal production increases are continued in the decade ahead at the same rate as they have been in the decade now ending, it is clear that a shortage of high-protein concentrates will remain. It appears that the need for the meal from a crop of 1 billion bushels of soybeans is actually less than a decade away."

Deviating from a discussion of the meal potential, and projecting his

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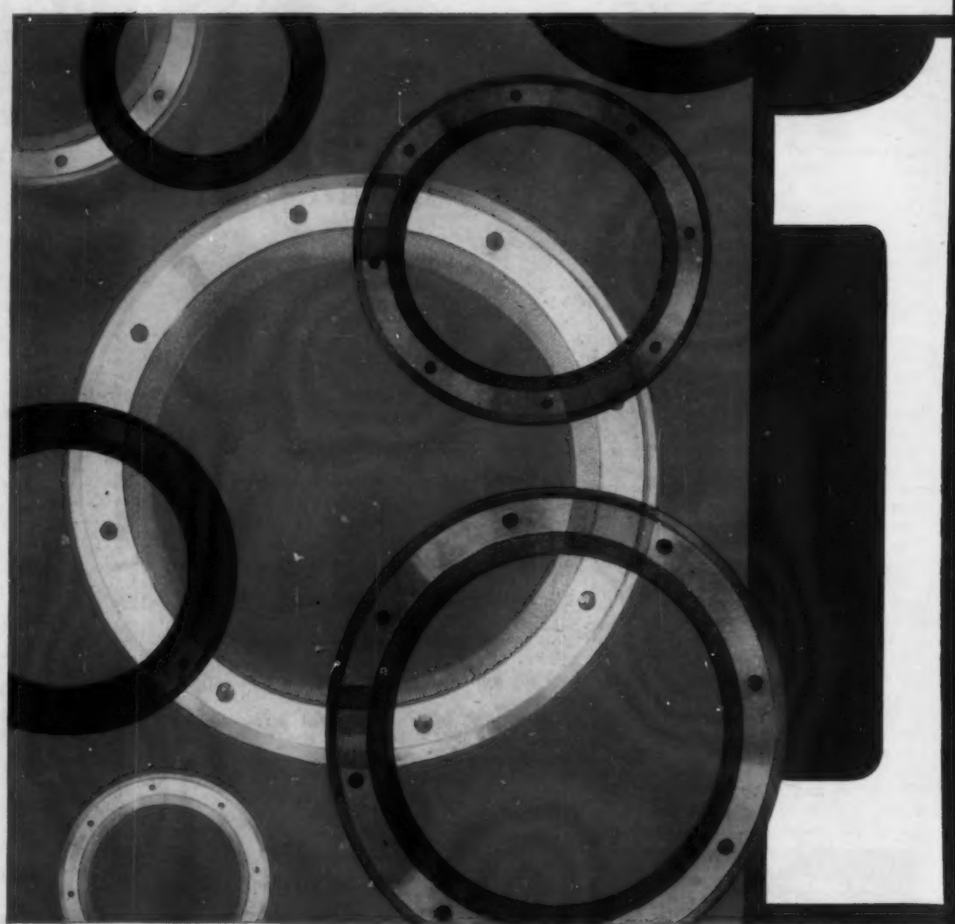

JB/110 P

analytical discussion into the field of probable supply and demand for oil, the University of Illinois economist spoke of the troublesome abundance of edible fats and oils generally in the U.S.

"Their production is increasing at a much faster pace than is their use. Other than soybean oil, fats and oils production in this country is stable—therefore, although increasing quantities of soybean oil are needed to maintain domestic per capita disappearance, these increased requirements for domestic use are very small in relation to the increase in soybean oil production. The possibilities of expanding the domestic market for fats and oils are negligible excepting at very low prices.

"The supply of competing oils such as lard, cotton oil, butter and tallow is extremely inelastic, and they cannot be driven out of production by selling soybean oil cheap. And to substantially expand domestic use of bean oil, it must become an essentially free food.

"The combination of a limited domestic demand for soybean oil, the expanding market for soybean meal and the fact that one cannot be produced without the other makes the export market for edible fats and oils of paramount importance to the further development of the soybean industry.

"In an absolute nutrient sense, there is a world fat shortage at the consumption level. But the fat shortage is in the poor areas of the world. Mere need does not make a market. It is desire plus the ability to buy that makes a market. But if world consumption of fats and oils in food uses is to be increased, it must be in the poor areas; in the under-developed countries. But, unfortunately, it is with these countries that the U.S. competes.

"In facing up to the problem of using all the oil made from soybeans, there may be some going backward in soybean acreage. The load that can be carried by meal is limited. Farmers will not increase their rate of feeding meal as fast at high- as at low-price levels.

"The way out of the dilemma of too little protein and too much fat," said Dr. Hieronymus, "is to switch from fat to protein—bringing implications of soybean breeding. Historically, beans have been bred for high oil content. As the unit value of protein increases in relation to the unit value of fat, the breeding emphasis should be shifted. At $60 ton, the protein content of 44% meal is worth 6.8¢ lb. Taking into account the effect of export disposal programs on oil prices, protein-unit value is very nearly as high as oil at the present time—perhaps higher.

"It so happens that soybeans are in a very strong competitive position. Their advantage lies in the relatively low yields of oil and high yields of meal. The oilseeds with which soybeans compete most directly have a much higher percentage of oil and much smaller percentage of meal. Accordingly, a reduction in the price of oil relative to the price of meal affects the competing oilseeds more importantly than it does soybeans. A 23¢ bu. drop in the price of soybeans will cost peanut growers 72¢ for an equal weight. Soybeans can stop further increases in production of competing oilseeds if prices are allowed to seek their own level.

"The soybean must be free to exploit the great strength of its competitive position. It is not now free to do so. Our export dumping schemes, specifically PL 480, result in an artificially high world price for fats and oils, which in turn encourages the expansion of production of competing oilseeds and retards the consumption of fats and oils in the poor areas of the world."

In conclusion, Dr. Hieronymus characterized the sale of surplus commodities by our government for foreign currencies as nothing but a "sophisticated dumping scheme" and said it, and all other varying operations under the authorization of PL 480, are doomed to ultimate failure.

"They invite retaliatory measures, compound rather than solve an existing situation and are very expensive," he said. Speaking specifically of the soybean industry, he said: "It has a great expansion potential. But this will never be realized until PL 480 is eliminated."

Dr. T. A. Hieronymus

SEES EXPANSION—Dr. T. A. Hieronymus, University of Illinois agricultural economist, is shown addressing the Commodity Club of Chicago on the competitive position of soybeans. A billion-bushel soybean crop to provide meal for protein supplement may occur within the next decade.

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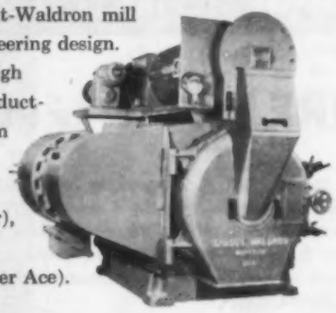

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Feeding Pelleted Hog Rations, Making Hay Pellets and Wafers Discussed

URBANA, ILL.—Pelleting a corn-soybean oil meal ration for growing or finishing hogs does not increase the ration's feeding value, it was reported by Dr. A. H. Jensen, University of Illinois swine researcher, at the recent Farm and Home Festival at the University of Illinois.

Another speaker, Prof. G. E. Pickard, university agricultural engineer, said pelleting hay and concentrates may increase the feeding value of livestock rations and allow even more of the feed-handling chores to be mechanized.

"But first someone will have to design and produce a pelleting or wafering machine that farmers can afford," Prof. Pickard said. "All the large farm machinery companies are working on pelleting or wafering machines. Most of them are aiming for a capacity of about five tons an hour and a price of $5,000-$10,000. A few are well along toward pilot-run production."

The speaker predicted that field machines would probably make wafers instead of pellets because wafers need much less power than present pelleting machines.

"It is also possible to wafer long or chopped hay at field moisture levels. Pelleting requires drying and grinding the hay finely before the pelleting machine will work," the agricultural engineer said.

"A few Illinois farmers are already using pelleted feeds. A stationary pelleting machine is already on the market, but its cost is too high for all but the largest feeders. Field wafering machines could probably be used as stationary units to wafer grain-hay mixtures."

Dr. Jensen said pigs up to about 40 lb. may use pelleted corn efficiently, but that so far all Illinois feeding trials indicate that this advantage does not exist for heavier hogs.

"When wheat, barley or sorghum grain is used in place of corn in swine rations," Dr. Jensen said, "pelleting has shown some advantage. Hogs take less feed to put on a pound of gain when such a ration is pelleted."

"Rate of gain in Illinois trials was higher when barley or sorghum grain rations were fed in pelleted form. Wheat rations showed about the same rate of gain when fed in either meal or pelleted form.

"Researchers have found out that pelleting makes swine rations much easier to handle because pelleting gets rid of the dust from powdery wheat and sorghum grain rations in meal form."

Feeding Wet Corn

Dr. G. E. Mitchell, department of animal science, discussed an experiment in which heifers fed corn with 36% moisture ate 2 lb. less corn a day than heifers fed drier corn.

The end result was that the heifers eating wet corn gained 1.51 lb. a day. This gain compares with 1.89 lb. a day for heifers fed 14.5% corn, 1.9 lb. a day for heifers fed 24% corn, and 1.91 lb. a day for heifers fed 29% corn, Dr. Mitchell explained.

"A considerable amount of heating showed up in the 36% moisture corn. This reduced the amount eaten by the heifers and caused the slower and less efficient gains," he said.

"These results indicate that high-moisture corn for beef cattle should be harvested at 25-30% moisture. Type of harvesting equipment being used, availability of suitable storage and ease of handling ensiled corn apparently will have more to do with the decision whether to put up high-moisture corn for beef cattle than will changes in feeding value."

Automated Dairy Feeding

Gene Shove, university agricultural engineer, said that with modern developments in feed handling automation, it may be possible to design an automatic system to supply complete, free-choice dairy rations. Such a system would grind and mix roughages and concentrates and then deliver the complete ration to free-choice feed bunks. He said studies are planned to develop this idea further.

An agronomist, Dr. R. W. Jugenheimer, said new corn hybrids will soon be available which will yield 30% more oil and 10% more protein than present hybrids. He said the new hybrids compare favorably with standard hybrids in yields, standability and other traits, and that the extra oil and protein in the grain will make them more valuable for feed and industrial uses.

Dr. Jugenheimer reported that when the new hybrids were fed to lambs, faster gains were realized on 6-7% less feed. He said two hybrids have been selected, and that farmers will be able to plant them in 1960.

Additives

Nutrition history may some day refer to the late 1940's and early 1950's as the "era of feed additives," Dr. W. W. Albert said. Researchers have successfully added hormones, chemicals and pharmaceuticals to cattle rations for faster and cheaper gains. He said more than two thirds of all fattening cattle now get hormones.

"Tests show that stilbestrol and Synovex, the two commonly used hormones, increase daily gains about 15% and improve feed efficiency about 12%," Dr. Albert said.

"Antibiotics such as Aureomycin or Terramycin at 70 to 80 mg. a head per day have increased gains on roughage rations about 10%. Levels up to 500 mg. a day help cut shipping fever losses.

"Urea is a satisfactory source of up to ⅓ of the nitrogen in fattening rations. Urea is less satisfactory for growing rations. Liquid molasses supplements have been no better than oil meals.

"A 68-day Illinois finishing test failed to get response from feeding the tranquilizer hydroxyzine. Tranquilizers do promise to reduce shipping shrink.

"Dynafac has shown negative results in Illinois tests, although some states report favorable results. Tapazole apparently stimulates gain early in the feeding period but causes a later decline.

"Other compounds including dried rumen additives, brewers' yeast, fish solubles and dried molasses have shown little or no response. Enzyme additives are in the testing stage."

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Albers Milling Publications Reach Producer with 'Business Approach'

Firm's Feed Salesmen Say the 'Magazines' Educate Them, Warm Up Their Prospects And Provide Them With an 'Opening Wedge.'

Eight magazine-like publications, each specialized in its content and each appealing to a specific type of reader, have proved to be of substantial value in the sales promotion efforts of Albers Milling Co., a division of Carnation Co., Los Angeles. The key to the effectiveness of these publications in selling Albers feeds seems to lie in their planning, which, said Robert D. Moore, feed advertising manager, is based on the theory "that the farmer of today has to be an astute businessman to make a profit and, therefore, is interested in a 'business approach' to the production of meat, milk or eggs."

The first step to selling is "winning confidence," according to Mr. Moore, who believes that the best step in this direction is a detailed program that helps the farmer to profits.

"We find our best way to gain the farmer's confidence (and his business)," Mr. Moore commented, "is to point out the areas in his operation that need (1) expansion, (2) improvement and (3) programming. That farmer—for example, a poultryman—is then given a step by step program on how he can expand: (1) Extra brooding facilities, (2) extra poultry housing, (3) a program of automation that will reduce his labor load, even with expansion, and (4) suggested financing to pay for the program."

Effectiveness Studied

Answering a question concerning the sales effectiveness of these publications, Mr. Moore mentioned studies made by his company's market research department. He cited, as an example, a recent issue of an Albers Research News edition dealing with calf feeds. A questionnaire sent to each farmer receiving the magazine revealed that 96% recalled reading the magazine and 3 out of 10 said their initial use of Albers products followed the magazine contact.

Mr. Moore commented that this particular issue was "costly" (six pages of four-color photography), "but still cost only 10¢ each" on a printing run of 200,000 copies. "It cost Albers $1 to make 10 calls of which three became customers—or a sale was closed for something over 30¢ each, counting the misses which we probably gained, in part, at least later," Mr. Moore said.

These Albers publications have not only proved valuable to the man interested in the "business approach" to the production of meat, milk or eggs, but Albers salesmen like them too. Mr. Moore said the company's salesmen have reported that the publications educate them, warm up prospects and give them an "opening wedge."

Sales Tool

The February, 1959, issue of Advertising Requirements, which made a thorough analysis of Albers' publications, quoted Mr. Moore as saying, "When a beef rancher walks into a dealer's store, throws an Albers Research News Beefys edition on the counter and says, 'Ship me 10 tons,' then both sales and advertising agree the 10¢ call of the Albers house organs has a prominent place in today's competitive feed selling efforts."

Of the eight "external house organs" published by the feed advertising division of Albers, six appear under the general heading of Albers Research News, but are aimed at a specific audience, such as the dairyman, the poultryman, the beef producer, the pig feeder and even the rabbit raiser. These subtitles include: Milk Farm News, Beefys Edition, Eggmaker Edition, Dairy Edition, Pigmaker Edition and Rabbit Family Edition.

These publications, which Mr. Moore, their editor, said make 925,000 contacts a year, are distributed to prospects or customers whose names have been supplied by Albers salesmen or through advertising department contacts.

Before each edition is distributed to a select group of prospects, these prospects receive a letter from Albers which tells of the material covered and offers an advance copy.

As requests for the editions are received, cards are made out in triplicate: A copy for the home office, one for a tickler file and one for the salesman who is asked to fill in the card with information obtained in making

AIMED AT SPECIFIC READERSHIP—This is a sampling of the magazine-like publications which Albers Milling Co., a division of Carnation Co., Los Angeles, uses in its sales promotion program. The publications, each specialized in its content, have proved popular among feeders of Albers products interested in the "business approach" to livestock, dairy and poultry production.

PUT GUARANTEED POTENCY
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You'll increase your feed sales, get more repeat business, gain hundreds of satisfied customers, by cashing in now on the HIGH POTENCY VITAMIN FORTIFICATION TREND in feeds.
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YOU GET THE THREE MOST IMPORTANT CALF FOOD FACTORS IN CAF-SUPP!
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BULLETIN M-588—12 page DAY pneumatic conveying guide just off the press. Discusses types of systems, illustrates and diagrams high and low density arrangements, shows equipment and tells "why" and "wherefore" of all types of pneumatic conveying including so-called fluidizing systems.

BULLETIN 574—12 pages, describes horizontal and vertical storage tanks. Points out savings and is filled with photos of various installations plus description of auxiliary equipment.
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Why are farmers, for whom there are many national, regional and state publications, attracted by the Albers "magazines"? Mr. Moore's answer: "The race to keep up with scientific agriculture would require hours of reading by our own men. The major farm publications do outstanding work, but they are of necessity generalized even in a vertical farm paper. Albers has one thing to sell—feeds—and, therefore, one thing to talk about—feeding. We cannot ask our salesmen or our farmer customers to read a 100-page magazine (multiplied by the 40 major farm publications) and come up with our contribution, but we do expect them to learn about our programs from our own publications."

The specialized tone of the Albers publications can be illustrated with sample editorial content from editions picked at random.

An article in the fall issue of Beefys Edition is titled "How to Winter Calves for 2½ lb. Daily Gain on No Grain Ration." Another article in the same edition deals with "Cutting Costs in Beef Cattle Production."

An Eggmaker Edition, designated as the "Chick Starter Issue, Winter, 1959," offers a first-hand report of a new egg cleaner "without endorsement." The "business approach" theme is obvious in another article's title, "A Business Approach to Poultry in 1959."

Nearly all of Albers' articles are based on scientific research, which if put to use, can mean more profit to the feeder. Basic research sources for the material published are: Albers' own research farm at Carnation, Wash.; agricultural college experiment stations, and field reports from Albers' own men obtained from small mills using Albers products or from farmers who have kept good records on feeding results.

There are several reasons why Research News editions are published only two or three times a year. Research articles are written from data resulting from trials covering months, and even years, and this data must be verified before publication. Feeding problems are considered seasonal and the publications are timed to reach the feeder when the subject matter is of most interest to him.

Two New Publications

In addition to the Research News editions, two new publications have been introduced. One is designed to keep dealers who handle Calf Manna, an Albers product, informed of current sales objectives, new promotions, current Albers advertising and plans for the future. This publication, Feed Profits, a two-color, news-type quarterly publication, creates a link between the Calf Manna dealer and Albers which the company believes is more necessary than with full line dealers because Calf Manna salesmen cover three states, concentrate on jobbers and call on dealers about once a year.

Another new publication is also devoted to Calf Manna, but Raising Better Livestock, a quarterly carrying the dealer's imprint, is produced from the consumer viewpoint.

Feed Plus Program

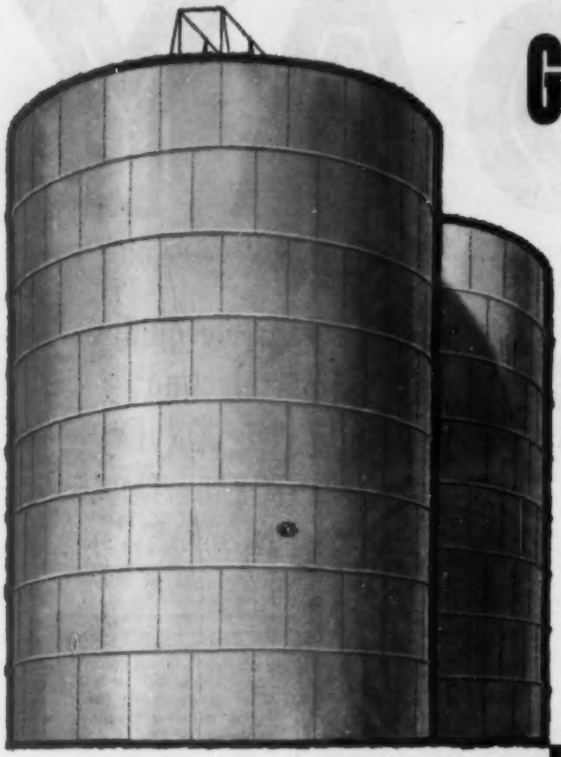
Albers has learned, according to Mr. Moore, that it "cannot just sell a feed, but must sell a feeding and management and expansion program for those farmers individually selected whom we feel can succeed if given the proper Albers supervision."

Along this line of thinking, Mr. Moore further commented, "It is better to find one business farmer with the initiative and ability to grow and work with him on expansion than it is to have our men work on five different accounts, at considerable expense, and have three of them fall by the wayside in a year or two through lack of attention to this 'business approach' to farming. The expansion of that one farmer can triple our business in three years, whereas the cold turkey calls on every rural route box holder can only lead to additional sales expense."

As a result of this situation, Mr. Moore said Albers finds itself developing equipment for feeding calves as well as the feed itself, and these developments are reported to the feeder through the Albers publications.

For instance, a recent Albers research bulletin discussed plastic nursing bottles for calves. "Our research found that to recommend a milk replacer for calves without giving the farmer the proper dispenser was, in effect, defeating our program," Mr. Moore commented.

"Our research has proved that pail feeding of calves caused (1) gulping, (2) digestive upsets and (3) mortality. And, too, we found that many of



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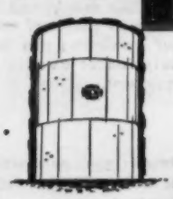

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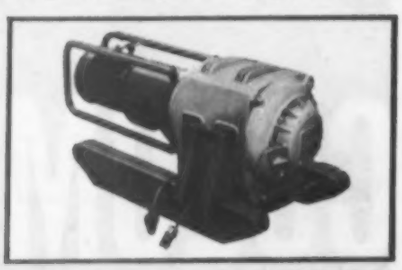

MOBY – A duplex unit, basically the same as the BULLY model. Output – 80 tons of soft feed per hour. Operates two scoops, each independently controlled by push-button switch. It weighs 946 lbs.

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'MODERN-STYLE' GROUND BREAKING—Ground was broken "modern-style" recently for a new $2.1 million addition to the A. O. Smith Corp. plant at Kankakee, Ill. The 164,000 sq. ft. addition will be used to triple production of Harvestore farm feed processing units and Permaglas mechanized storage units for industry. L. M. Osborne, general manager, Harvestore Products, is at the controls of the tractor taking the first bite of earth while J. H. Brinker (right), vice president, Permaglas division, provides direction. Looking on are Morris Fonda (extreme left), general sales manager, Harvestore Products, and Kenneth Vaughan, chairman of the Harvestore dealer council and field sales representative with Aberdeen (S.D.) Steel Co.

the ingredients put into any milk replacer product for calves settled out in pails. These ingredients put into the product to fight colds and build blood count were lost to the calf.

"So, we researched and developed the plastic nursing bottle to correct this and to give the farmer 100% performance from the product. Die costs of $4,000 for a plastic 2-qt. bottle, plus $50,000 spent on packaging and display, and some $200,000 spent to introduce the idea seem absurd to some feed manufacturers."

Mr. Moore noted that marketing research showed Albers that women and children, in many instances, feed the calves. "They did not like heavy pails," he said. "They could carry two plastic bottles—without spilling. Result: Our milk replacer, on the market 10 years, has jumped 100% in sales in the last three years since this bottle has been introduced."

Another instance of applied Albers research—reported in the fall, 1958, issue of Beefys Edition—has to do with the development of a machine called the Sumner Foragizer. Mr. Moore said Albers entered the heavy equipment farm field with the machine, costing $32,000, "because there were five hay-handling chores from field to feeder that could be eliminated by this machine—including the baling of hay."

Mr. Moore said that in order for Albers to gain "the confidence (and again, the business) of the beef and dairy farmer, we had to produce a product that cut his labor costs, transportation costs and still give him a better feed for more beef or milk."

The Sumner Foragizer, according to Mr. Moore's description, takes chopped hay and compresses it into a "Hayfer" (4 in. in diameter and 1 in. thick) in the field. No baling nor roadsiding is required, he said, and concentrates and grain can be combined in the "Hayfer" for a complete feed. "No more feeding of hay one time then coming back and feeding grains," he said. "Labor time is cut 50% for the farmer."

Mr. Moore noted that the Hawaiian Islands and Japan, deficient in hay for their dairy cows, could be shipped "Hayfer" at "20% of the cost of baled hay because it is compressed to one third the density of baled hay."

The Albers official concluded his discussion of his company's research and publication services with these thoughts:

"Media advertising is as important to our selling work as ever before, but we must present these facts, in detail, to the farmer—and that takes our own publications. Media do create an interest. Our Albers Research News tells him how to make money—in detail—and the businessman-farmer appreciates that service."

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THREE MODELS:

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Operate the mill 10 days. If not satisfied, return it. WE WILL REFUND YOUR MONEY AND PAY RETURN FREIGHT.

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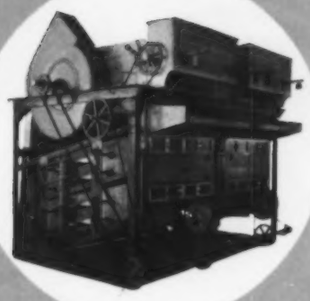

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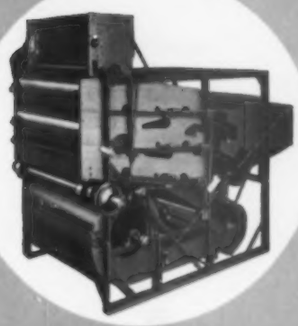

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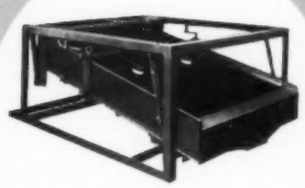

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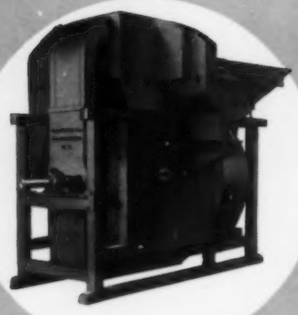

OAT CLIPPER • 7 models in 9 sizes for all capacities.

does so much...so long...for so little

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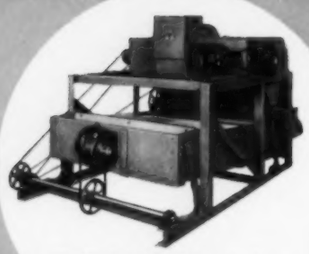

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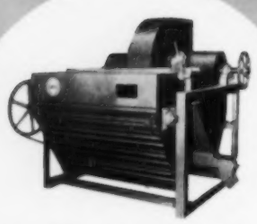

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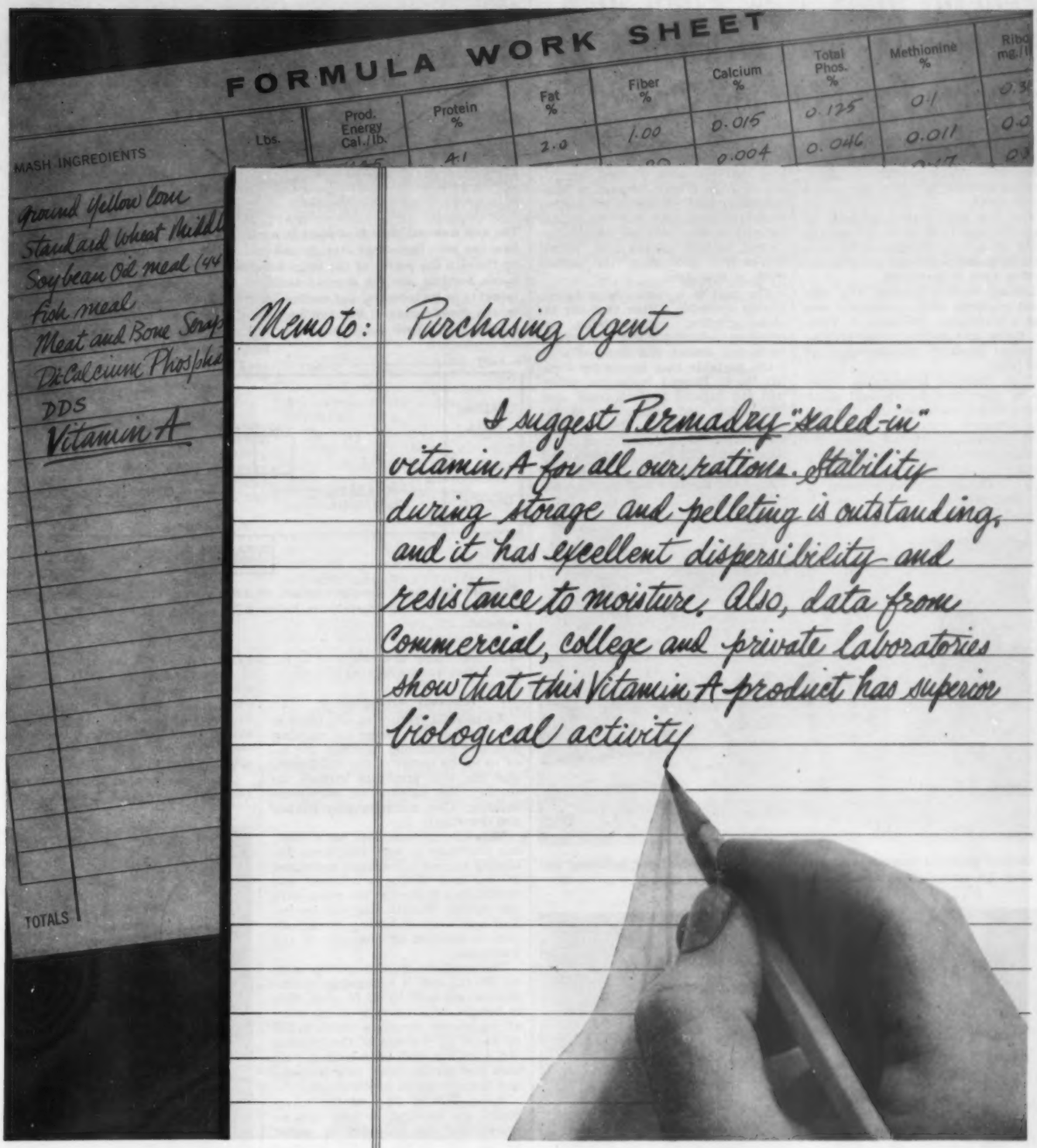

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General Mills' New Plant in Florida Provides Efficient, Flexible Feed Milling Operation

Now in full operation at Tampa, Fla., is a new feed plant of General Mills, Inc., which provides efficient, flexible manufacture of a full line of Larro feeds.

The new mill, with a capacity of some 100 tons in 16 hours, follows the trend of getting smaller scale, economical production units closer to the feeding area to be served.

Serving central Florida, the new plant replaces what previously was just a warehouse operation in Tampa. Dairy and poultry feeds are the principal products manufactured at this mill.

C. E. Olson of Minneapolis, director of operations for General Mills' feed division, explained that the mill was designed primarily for a bulk feed operation. At the same time, facilities are provided for sacking feeds.

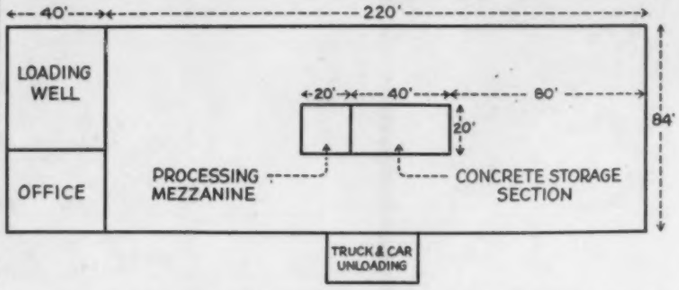
R. F. Collier is superintendent of the new mill, and Frazier Rogers is district sales manager.

The plant immediately demonstrated that it could turn out feed in the way that had been planned, according to J. D. (Don) Johnson of Minneapolis, feed division production superintendent, who was responsible for getting the operation under way. In fact, he said, the plant was in full trouble-free production the second week of operation.

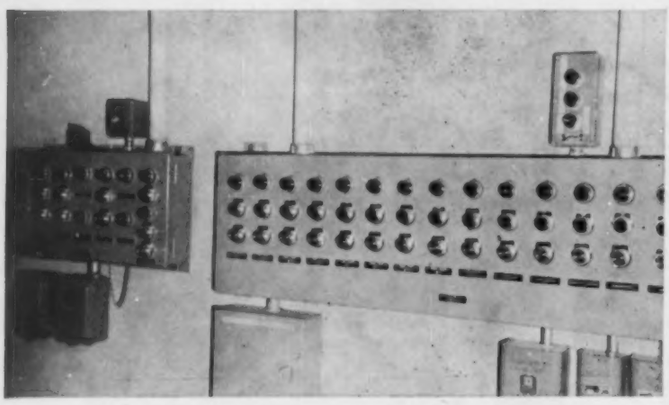
The mill is a push-button batch-mixing operation. Other facilities include grinding, liquid mixing, oat crimping, pelleting and packing. Bulk feeds are stored and handled with 1-ton portable bins moved by fork-lift truck. Bagged feeds are palletized and handled by fork truck also. The design and engineering of the plant were provided by General Mills' engineering department, with M. J. Kloster as senior engineer. Jones-Hettelsater Construction Co., Kansas City, built the mill and installed the equipment.

The plant includes a slip-form concrete silo, rising to a height of 72 ft., and a steel and corrugated iron warehouse.

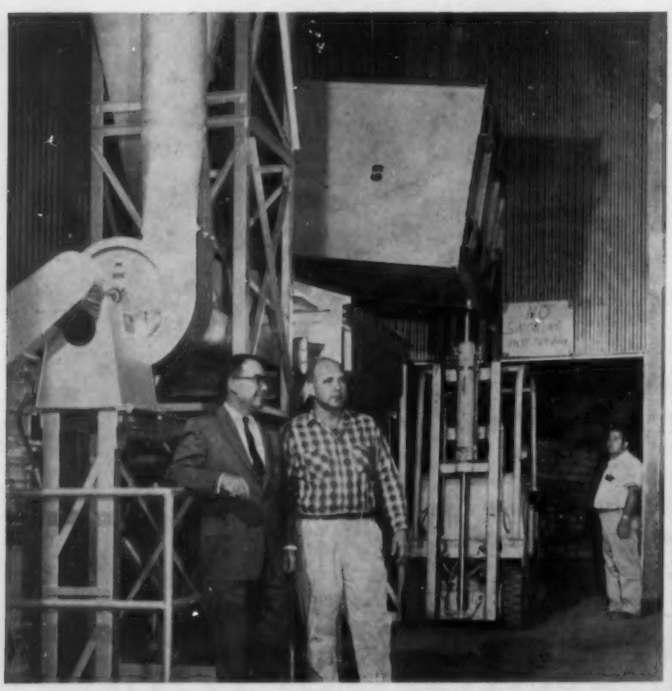
The new General Mills feed plant in northeast Tampa, Fla. This picture shows how the bulk ingredient storage and mill building (center in photo) extends up through the center of the large warehouse. On the right side of the warehouse building are the covered facilities for unloading cars or bulk trucks bringing in ingredients, and on the far right are the liquid ingredient tanks. In the front corner of the building is the office area, and to the left is the loading well where either sacked or bulk feeds are loaded into trucks.



This drawing shows the plant layout, with the storage and processing facilities in the center of the warehouse building. The office and loading well are at one end.



A manual push-button system is used to control ingredient proportioning and mixing. An automatic system may be installed later if desired.



Frazier Rogers (left), district sales manager at Tampa, and R. F. Collier, regional production manager and superintendent of the Tampa mill, are standing by the facilities for loading out bulk feed. Feed is dumped from 1-ton portable "Sure-Bins"—handled by forklift truck—into the hopper in the background. The feed is then raised with a Jacobson inclined drag, partially visible here, and spouted into bulk trucks. Also pictured partially here is the dust collecting system for these facilities to prevent loss of product in handling.

Unusual Arrangement

An unusual feature of this plant is the fact that the storage and working bins and processing facilities are located in the center of the warehouse, and the mill structure extends up through the surrounding warehouse building. (See accompanying picture and drawing.)

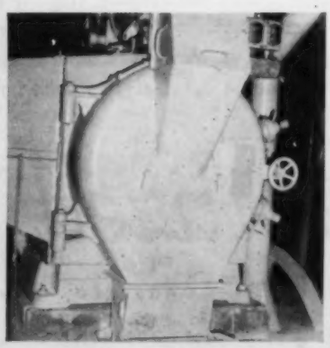
This arrangement, said Mr. Collier, has proven to be very functional. Incoming bagged ingredients are stored at one end of the warehouse and the finished product at the other, with the milling facilities in the center. Rail and truck unloading of ingredients is handled at one side of the warehouse.

The concrete storage section is 40 by 20 ft., and a processing mezzanine covers a 20 by 20 ft. area. This is located in the center of the overall warehouse structure which is 260 by 84 ft. At one end of the building are a loading well—for loading both bulk and sacked feeds into trucks—and the office and locker room.

Approximately 75% of the ingredients are received in bulk cars or trucks and are unloaded by power shovel. The power shovel is on a swivel so that material from either cars or trucks in the covered unloading section can be unloaded into the receiving hopper.

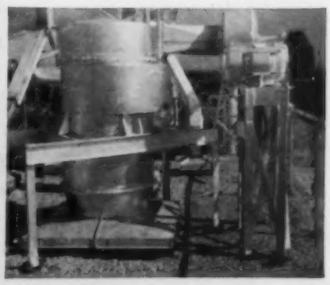
The bulk ingredients move by chain drag and bucket elevator into any of 13 concrete bins with a total capacity of some 400 tons. The warehouse provides for some 1,000 tons of sacked storage, including both ingredients and finished feed. Finished feed storage in the warehouse can be either sacked or bulk (the latter in portable bins).

Grains are ground with a 40 h.p. Jacobson hammermill. This is a closed

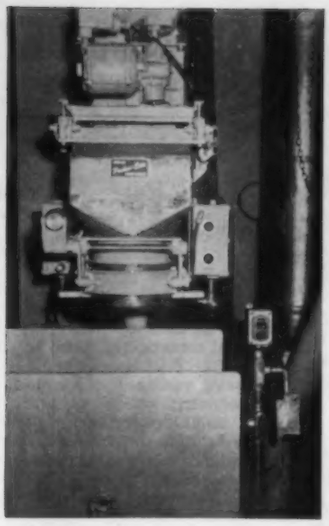


Pellets are made with a 75 h.p. Sprout-Waldron unit pictured here.

This 40 h.p. Jacobson hammermill is used in a closed grinding system, which finds air being returned from the collector to the hammermill, to prevent loss of product.



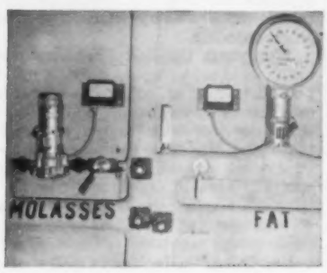
The collector atop the mill building which is part of the closed grinding system.



A Bemis Super Packerette is used to sack finished feeds.

grinding system, using negative pressure, with the air returned from the cyclone to the hammermill, to eliminate loss of product which normally occurs. The line includes a stocking collector to relieve pressure on the system.

Crimping of oats is handled with a horizontal steaming conveyor which moves the grain into a set of Great Western rolls. An S. Howes cleaner is used on the oats.



Here are the controls, located in the main control room, for addition of fat or molasses to feeds.

Liquid ingredients, molasses and fat are stored in outside steel tanks holding 6,000 gal. each. The liquids flow by gravity to work tanks in the basement of the plant before going into the feed mixes.

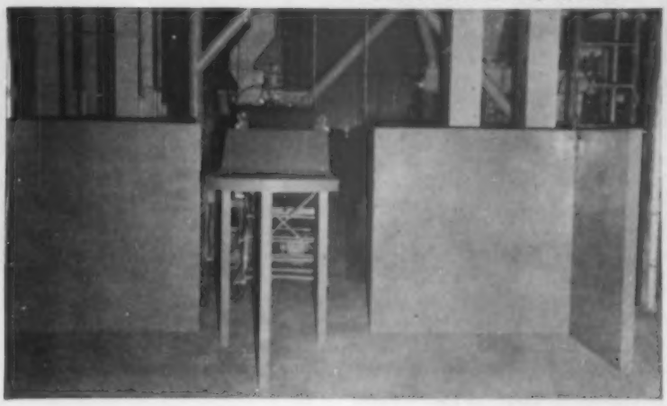
Mixing

Proportioning and mixing are controlled with a manually operated push-button system using a Hardy scale. Provision has been made for incorporation of an automatic control system later if desired.

Major ingredients are moved from the ingredient bins by screw feeders into the hopper scale and then drop into the 2-ton horizontal Strong-Scott batch mixer. The control system includes a timer for the mixer, which automatically discharges after the prescribed time. The gate remains open until the mixer is empty and then closes. Minor ingredients are added to the mixer through a dump sink.

The feed goes from the mixer to a surge bin and then is elevated to a Strong-Scott scalping reel. The material goes through or bypasses an S. Howes Eureka duplex mixer where liquids are added. The addition of molasses and fat, which can be incorporated in any amount that the dry material will take, is controlled from the batch mixing control room. An electro-mechanical control system, of General Mills' own design, is used for metering the liquids into the continuous mixer. It has resulted in a minimum of trouble, Mr. Collier said. The rate of flow is set in the control room. The liquid bypasses the mixer unless dry feed goes into it, and then the molasses or fat goes through a valve and into the mixer at the proper rate.

The pelleting system includes a 75 h.p. Sprout-Waldron pellet mill, with a Sprout-Waldron vertical cooler and the crumble roll in the basement. The pellets or crumbles move by drag conveyor and elevator to a Strong-Scott Power-Flo shaker.



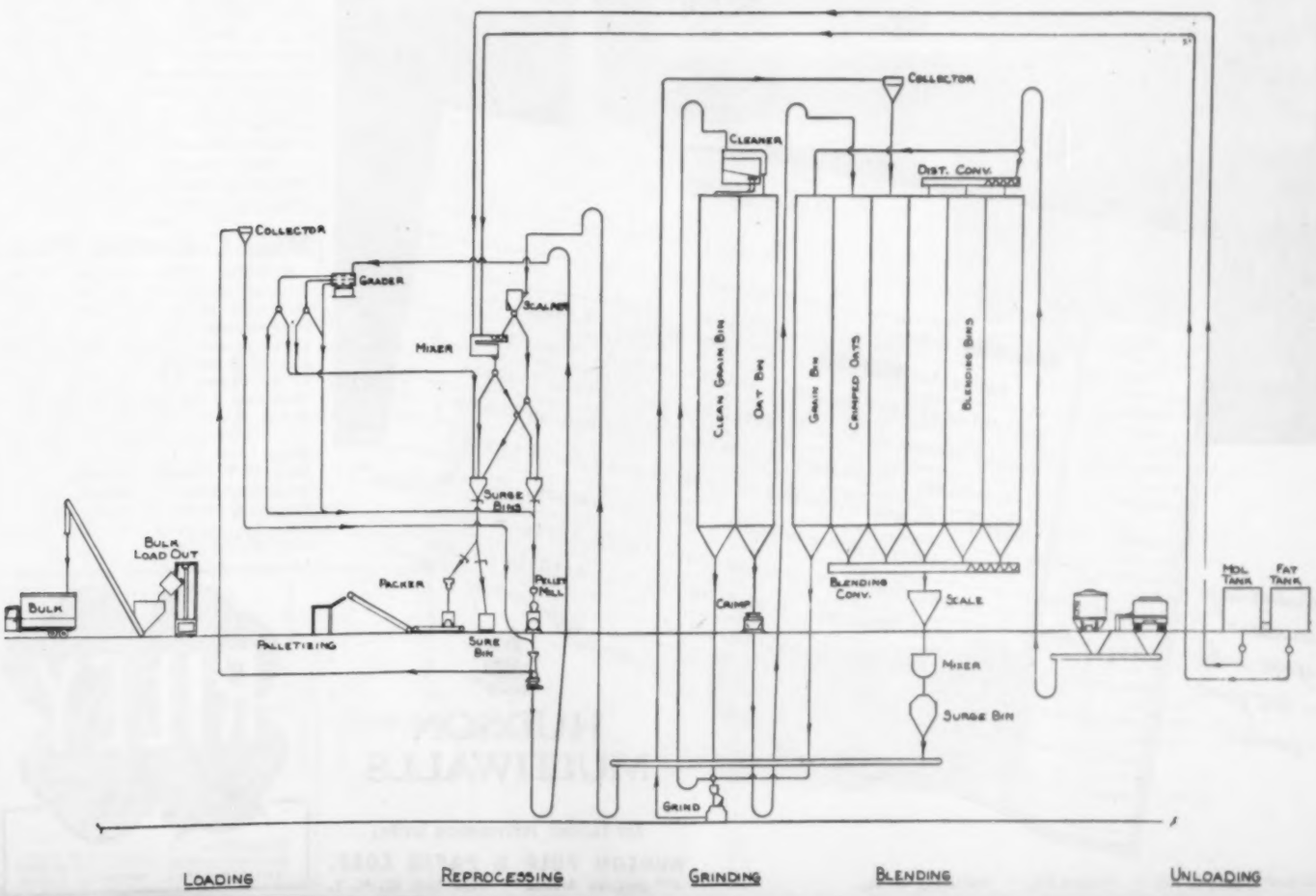
From the packer, sacked feeds move by inclined belt conveyor to the steel table and palletizing jigs shown here.

Finished Feed Handling

The finished feeds, in mash, pellet or crumble form, go into a packing bin. From there the feeds go to a Bemis Super Packerette, which is used to pack feeds at a rate of eight bags a minute on 50's, or the feed may bypass the bagging scale and go

A warehouse view of sacked feed on pallets. Note how the warehouse floor is laid out for pallet spots, using highway marking paint.

Simplified Flow Chart



A view of the loading well at the end of the warehouse. Both sacked and bulk feeds are loaded out here. On the right are the facilities for loading out bulk feeds moved to the dock in portable bins by bulk truck.

into 1-ton portable "Sure-Bins" on a dormant scale.

No overhead bulk tanks are used at this plant. All of the bulk feed is stored and handled in the portable steel bins, which are moved by Towmotor forklift trucks.

From the packer, sacked feeds move by inclined belt conveyor to a steel table and then are put on pallets using palletizing jigs on each side of the table. The feed is stored three and four pallet loads high in the warehouse.

The portable bulk bins also may be stored in the same finished feed warehouse area at one end of the building. Both bulk and sacked feeds are loaded into trucks in the loading well at the end of the warehouse.

In loading out of bulk feed, a fork truck, equipped with a rotary head, dumps the feed into a hopper. It is raised with an inclined Jacobson drag and spouted into the truck.

The floor of the warehouse is laid out for pallet spots, using highway marking paint. This, Mr. Collier pointed out, assures proper spacing and clearance, resulting in a minimum of damage to the sacked materials.

The entire plant set-up, said Mr. Collier, has resulted in a flexible operation which provides efficient and economical manufacture and handling of Larro feeds.

Golding Test for Milk Solids Is Field Tested

CHICAGO—Field tests are underway with the new "Golding test" or "graded gravity ball" method for determining solids not fat in milk, it has been reported by the American Dairy Assn., Chicago.

Work on the principles involved and mechanization of the test have been almost completed by the originator, Dr. N. S. Golding, Washington State College, after five years of research. This is one of 28 research projects being supported by the nation's dairy farmers at 16 universities and medical centers, according to an ADA report.

"Increasing realization by consumers of the nutritional value found in the milk solids below the creamline gives added significance to this simple, rapid method. For years milk has been purchased by plants from producers on the basis of its butterfat content alone. Many plants now recognize total solids content in their payments to producers," the ADA said.

"Dr. Golding's new test offers promise of great usefulness on the farm for dairy herd improvement work, and in the dairy plant where it could be used extensively in combination with the Babcock butterfat test in figuring milk payments to producers. Dr. A. O. Shaw, dairy science chairman at Washington State College, says the Golding test 'could revolutionize both dairy marketing and dairy breeding.'

"For years the dairy industry has been seeking a rapid, easy method for determining solids in milk. A number of tests are available, but their use has been limited by such factors as expensive equipment, time-consuming operations and need for specially trained operators."

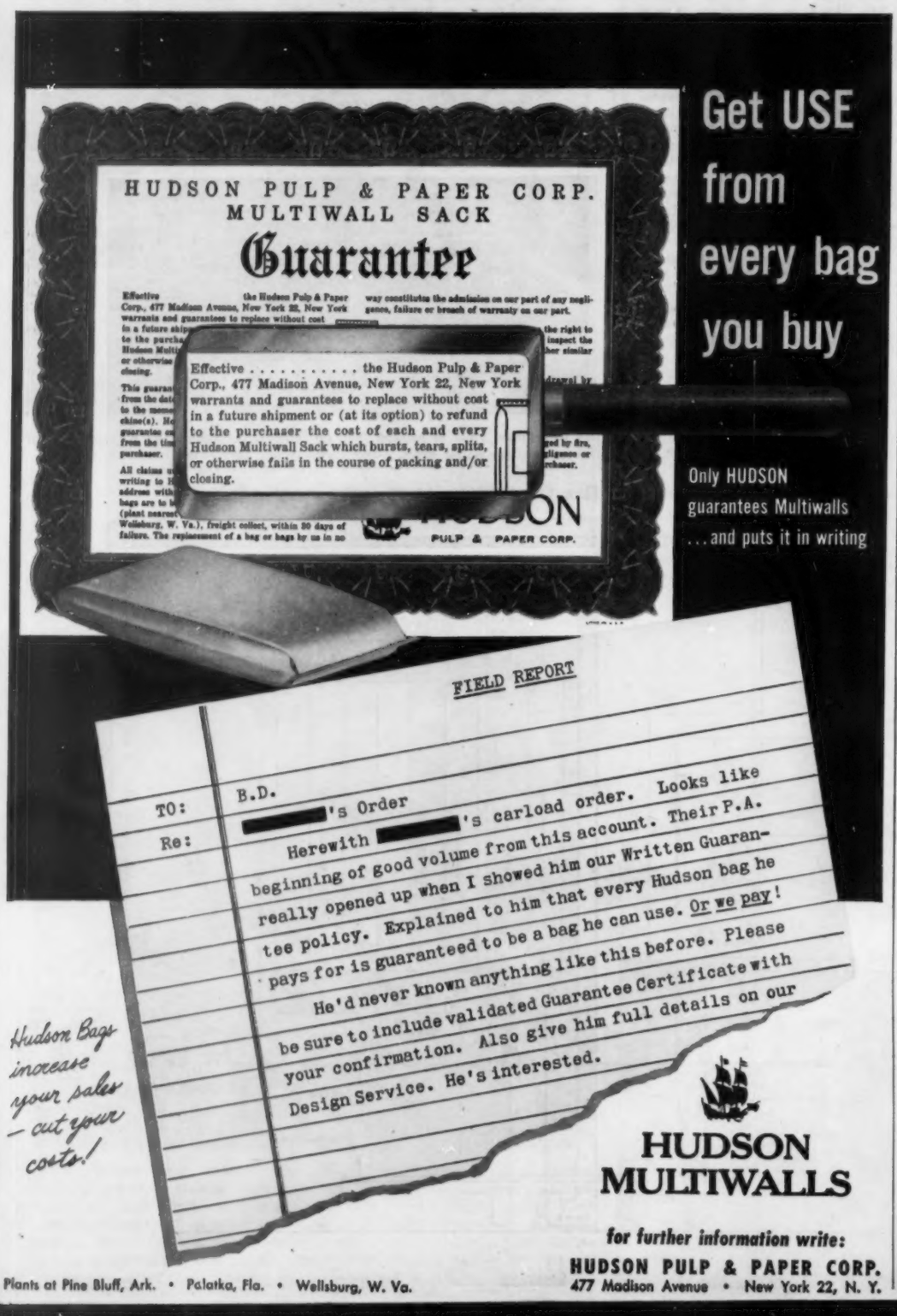
Advantages of the Golding test, as pointed out by Dr. D. H. Jacobsen, product and nutrition research director of the ADA, include: (1) Its simplicity; (2) it is inexpensive; (3) it is quick, taking no more time than the Babcock fat test; (4) it fits well with butterfat sampling and testing, and (5) it requires no centrifuge.

The test unit consists of a simple combination of 10 "graded gravity" balls, an ordinary 4-oz. sample jar with a special snap-in grid through which the milk is added. After temperature adjustment, a reading is taken of the number of balls on the bottom of the jar. An easy-to-read chart is used to interpret results.

The Babcock test for butterfat can be made from the same sample of milk and is used along with the "ball" test in determining the total solids.

Make Convention Plans

FOREST, MISS.—Members of the program committee for the annual convention of the Mississippi Poultry Improvement Assn. convention met in Forest recently to make plans for the November meeting which is to be held at the Buena Vista Hotel in Biloxi. Members of the committee are Cecil Payne, Morton; Fred L. Gaddis, Forest; Paul Yount, executive secretary, State College; D. T. Irby, Hattiesburg; C. T. Ramzey, Carthage, association president; Fred Moore, Morton; Grady Brunson, Meridian; James E. Hill, State College, and Dr. Elbert Day, State College.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Effective ..... the Hudson Pulp & Paper Corp., 477 Madison Avenue, New York 22, New York warrants and guarantees to replace without cost in a future shipment or (at its option) to refund to the purchaser the cost of each and every Hudson Multiwall Sack which bursts, tears, splits, or otherwise fails in the course of packing and/or closing.
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Get USE from every bag you buy
Only HUDSON guarantees Multiwalls ...and puts it in writing
FIELD REPORT
TO: B.D.
Re: [redacted]'s Order
Herewith [redacted]'s carload order. Looks like beginning of good volume from this account. Their P.A. really opened up when I showed him our Written Guarantee policy. Explained to him that every Hudson bag he pays for is guaranteed to be a bag he can use. Or we pay!
He'd never known anything like this before. Please be sure to include validated Guarantee Certificate with your confirmation. Also give him full details on our Design Service. He's interested.
Hudson Bags increase your sales — cut your costs!
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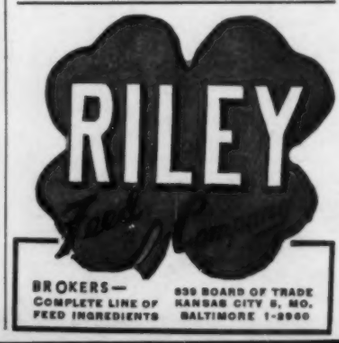


HERE'S HOW

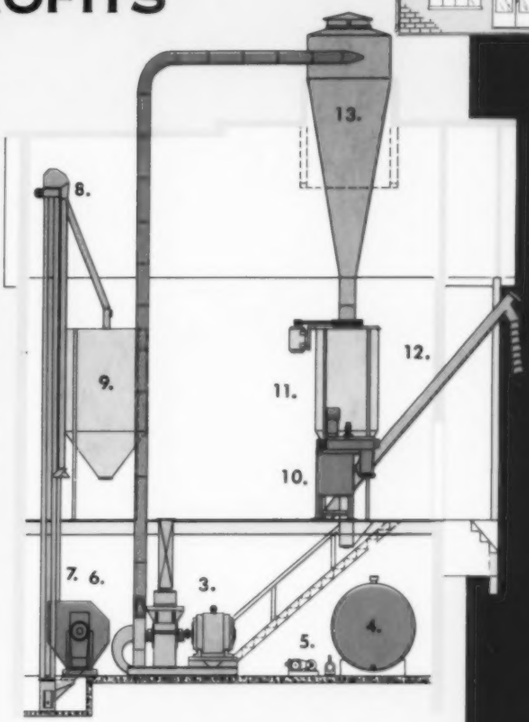
KELLY DUPLEX *mill equipment*

CUTS LABOR COSTS AND BOOSTS PROFITS

Today, more than ever before, the only real guarantee of profitable feed mill or elevator operation lies in a combination of good planning and good machinery.

Take for example the feed mill shown on this page which was prepared by Kelly Duplex engineers for the Bath County Milling Company of Owingsville, Kentucky. They wanted complete facilities for handling both regular and sweet feeds—in bags and in bulk. The plan we worked out gives them a virtually automatic operation requiring only minimum manpower. The machinery arrangement is highly compact—yet ample space has been left to assure top production efficiency and easy servicing. In addition, provision has been made for economical future expansion. Now—in the second year of operation—Sherman Goodpaster, Jr., owner of the mill, says, "I'm more convinced every day that it's the best investment we could possibly have made. I've never seen a better plan for a small mill."

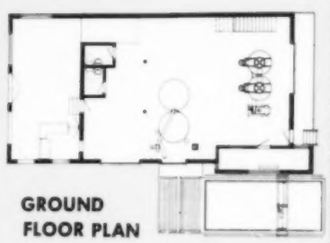
Whatever you have in mind—a new feed mill or a revamping of your present space—it will pay you to investigate the profit-making possibilities of Kelly Duplex equipment and our mill planning and layout service. There's no obligation—just check and mail card TODAY!



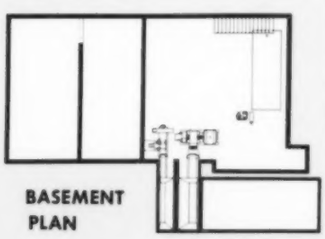
GOOD MACHINERY MAKES THIS PLAN EVEN BETTER

Here is a list of the machines used in this mill. They are keyed to the drawings by number.

1. Kelly Duplex Truck Hoist
2. Kelly Duplex 20" Double Chain Drag
3. Kelly Duplex K-20 Hammermill with direct connected 100 HP motor—and automatic drag control
4. Kelly Duplex Molasses Tank
5. Kelly Duplex Molasses Pump
6. Kelly Duplex Corn Sheller
7. Kelly Duplex 12" Pit Auger (with vari-speed control) to feed corn sheller
8. Kelly Duplex All Steel Bucket Elevator
9. Two Kelly Duplex No. 4 Grain Bins
10. Kelly Duplex Twin Molasses Mixer
11. Two Kelly Duplex No. 3 Vertical Feed Mixers
12. Kelly Duplex Screw Elevator with flexible spouting
13. Two Kelly Duplex Dust Collectors



GROUND FLOOR PLAN



BASEMENT PLAN

THE DUPLEX MILL & MANUFACTURING CO., SPRINGFIELD, OHIO

Yes, I'm interested in your free mill planning and layout service—and in the machines checked at the right. Without obligation, please send me complete information.

☐ *Information on Free Mill Planning and Layout Service*

NAME_____

FIRM_____ TEL. NO._____

CITY_____ STATE_____

MAIL THIS CARD NO OBLIGATION

- ☐ Chain Drag
- ☐ Electric Truck Hoist
- ☐ Vertical Feed Mixer
- ☐ Hammermill
- ☐ Twin Molasses Mixer
- ☐ Vertical Screw Elevator
- ☐ Portable Screw Elevator
- ☐ Bucket Elevator
- ☐ Pit Auger
- ☐ Corn Crusher—Regulator
- ☐ Corn Sheller with Blowers
- ☐ Regular Corn Sheller
- ☐ Pitless Corn Sheller
- ☐ Combined Sheller-Cleaner
- ☐ Gyrating Cleaner
- ☐ Corn Scalper
- ☐ Corn Cutter and Grader
- ☐ Cob Crusher
- ☐ Electric Bag Cleaner
- ☐ Forced Air Carloader
- ☐ Magnetic Separator
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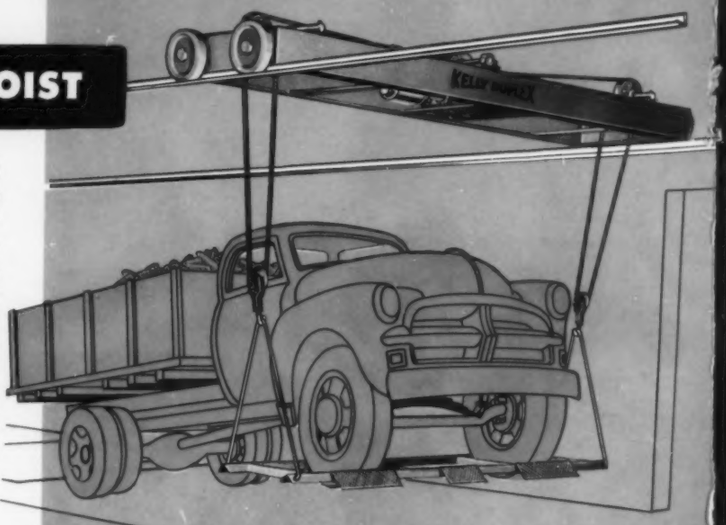
These KELLY DUPLEX machines work together to give you "extra profits" on grain handling

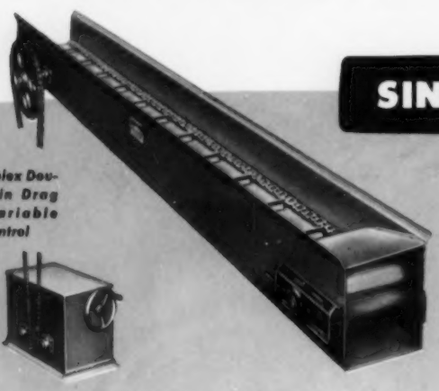
ELECTRIC TRUCK HOIST



Designed to unload trucks in less time and with less power . . . and ruggedly constructed to assure trouble-free performance and long life . . . the Kelly Duplex Electric Truck Hoist brings top speed, efficiency and economy to your grain handling operation.

All welded steel construction, tough steel cable, heavy duty motor and special gearing combine to lift loads with absolute ease and safety. Positive action switch controls all raising and lowering —lifts truck to any height up to 15 feet, stops operation instantly at any point, holds truck at desired angle for any length of time. The entire hoist moves freely on an overhead steel track (so flanged that wheels cannot "jump the track" regardless of stress) . . . can easily be positioned for unloading into any number of dump sinks. Available in any width and powered to meet your requirements, this machine can be furnished with either a ramp or a mat type cradle. Mail card today for full details.

SINGLE & DOUBLE CHAIN DRAGS



Kelly Duplex Double Chain Drag with variable speed control

As grain dump drags . . . as conveyors . . . as feeders for hammermills, corn shellers or other machinery—Kelly Duplex Chain Drags are unsurpassed for steady, even delivery of grain and ear corn. Single chain drags have V-trough construction—choice of wood or steel box. Double chain drags are made entirely of welded steel—are available with 12", 16", 20" or 24" wide beds. All drags can be made in any length with either single or double gear reduction . . . can be powered by motor or belt drive . . . and can be furnished with variable speed control. Mail card for full details.

Chain Drag or Pit Auger with Automatic Motor Control

. . prevents overloading of hammermill-improves efficiency

An automatic motor control that prevents a hammermill feeder from causing ampere fluctuation on the hammermill is available at extra cost on Kelly Duplex Chain Drags and Pit Augers. This control connects to both the hammermill motor and the feeder motor. If the hammermill motor begins to show an overload due to excessively rapid feeding—the motor on the feeder ***automatically*** stops until the load passes—then ***automatically*** starts again.

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SPRINGFIELD, OHIO

NOW – unlock more beef from your feed with

ZYMO-PABST

FEED ENZYMES

Feed trial results prove ZYMO-PABST improves feed conversion — speeds weight gains

	CONTROL	ZYMO-PABST
Number of Steers	25	25
Number of Days	54	54
Initial Weight, Lbs.	885.33	889.47
Final Weight, Lbs.	1071.80	1098.67
Total Gain, Lbs.	186.47	209.20
Daily Gain, Lbs.	3.45	3.87
Total Feed Per Steer, Lbs.	1369.47	1404.19
Average Daily Feed, Lbs.	25.33	25.96
Feed Per 100-Lb. Gain, Lbs.	734.41	671.23

STEERS FED **ZYMO-PABST**

1. Gained .42 pounds more per day
2. Averaged 22.73 pounds heavier
3. Gained 12.2% more on 8.6% less feed

For more information on ZYMO-PABST write

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Now serving the Southwest

PETER HAND'S NEW TEXAS PLANT

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VITAMINS • ANTIBIOTICS
PETER HAND PREMIXES
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For overnight service in the Southwest . . .
Dallas telephone: Riverside 2-5969
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PETER HAND FOUNDATION
130 HOWELL STREET, DALLAS 7
1000 NORTH AVENUE, CHICAGO 22

NEW STORAGE INSTALLATION PLANNED—This aerial photo of the Andersons' Maumee, Ohio, plant shows dubbed in at left a 22-bin, 10-million-bushel storage installation planned by the firm. Each tank will be 44 ft. high at the wall and 114 ft. in diameter and will hold 450,000 bu. The area covered with tanks is over six acres. Addition of the facility will increase the firm's storage capacity to 14 million bushels. It is "the first major step" planned by the Andersons to meet the demands expected to be created by the St. Lawrence Seaway.

Ohio Firm to Construct Large Storage Addition

MAUMEE, OHIO—The Andersons, Maumee, has announced the letting of contracts for the construction of about 10 million bushels of additional storage capacity here. This will increase the firm's total capacity to about 14 million bushels.

The firm announced that the storage unit is its first major step to meet the contemplated need created by the St. Lawrence River development. With access to the Maumee River via hopper cars on the Wabash Railroad, the firm said the addition is thus 10 million bushels of additional grain capacity for the Port of Toledo.

Before the year is out, the announcement said, the company also hopes to announce the letting of contracts for a new transfer house on the river.

The new unit will be equipped with a complete aeration system as well as a temperature control. Planned are 528 drop cords with about 5,000 thermocouples. Temperatures at the thermocouples will be printed automatically.

Automation planned for the storage units will allow a carload or truckload of grain to be put in one of the 22 bins of 450,000 bu. each from the point of unloading, by control at this point. Belts handling the grain will have a capacity of 25,000 bu. per hour.

To Establish Warehouse

LAKE, MISS.—The Big Dutchman Poultry Equipment Co., Zeeland, Ohio, will establish a warehouse near Lake with T. H. Hannah, Lawrence, as distributor, it is reported. The warehouse will serve the Mississippi area. Mr. Hannah said the company's nearest warehouses are in Alabama and Texas.

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FISH MEAL
PROMPT and DEFERRED SHIPMENTS
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FULL MEAL
(Fishmeal with Solubles)
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FISH SOLUBLES
Dried 100% Pure
Made of South African Pilchards
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UNEXTRACTED ANIMAL LIVER and GLANDULAR MEAL
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Write for name and address of your nearest West Coast Distributor.

H S TANDEM *Molasses Mixer*

SAVE SPACE WITH H & S COMPACT SINGLE UNIT

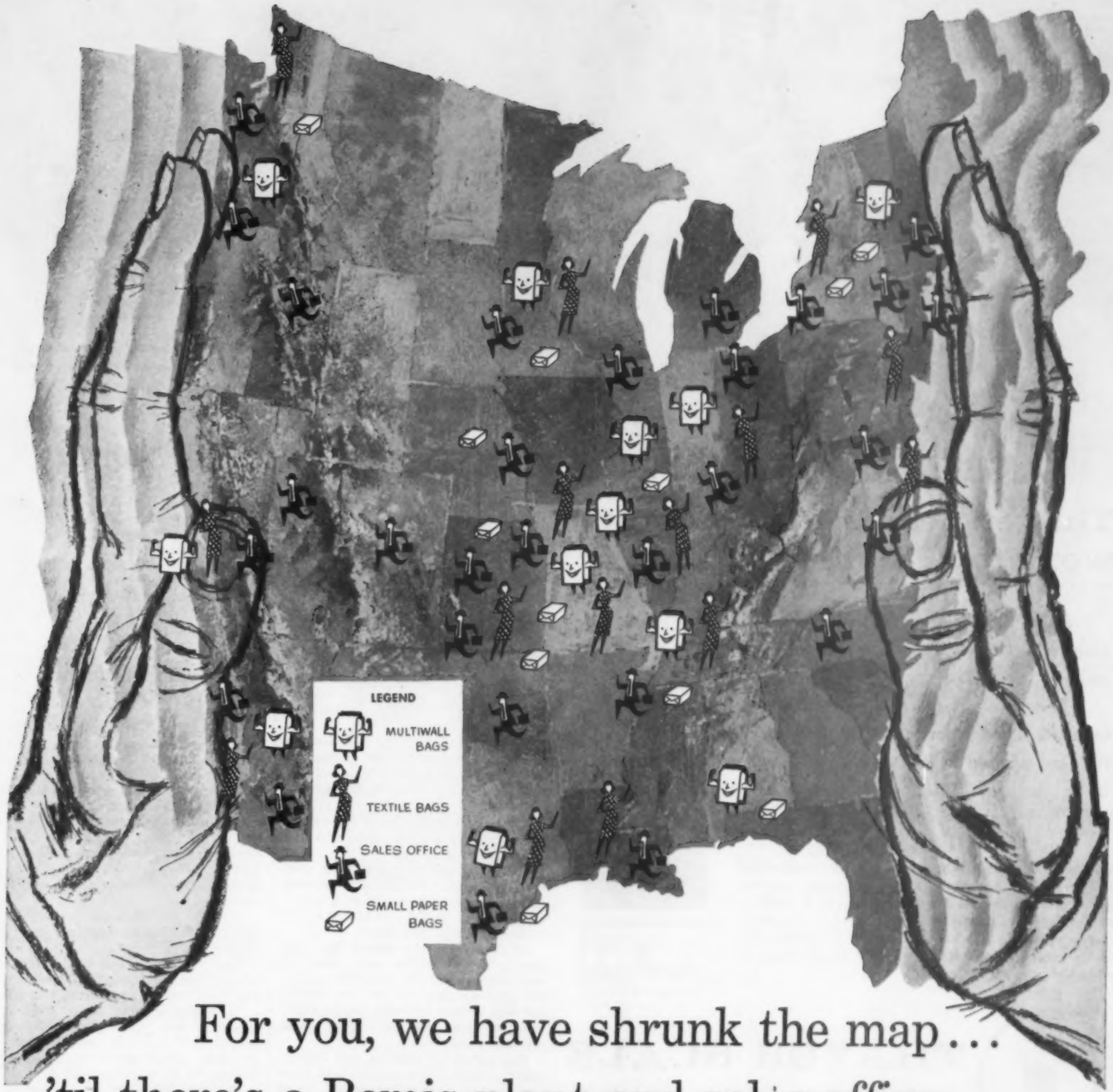
Hayes and Stolz new all-purpose mixer applies liquids to both light and heavy feeds. Using slow speeds and tandem mixing principles. A high percentage of liquid may be applied on absorbent ingredients.

Two rows of easily accessible mixing paddles are contained in double U troughs. Paddles are adjustable to control intensity of mixing action.

The new H & S Tandem Molasses Mixer is equipped with: Meter flow pump, separate powered feeder, 500 gallon heating tank, water tubed electric heating element and electric liquid level control. (Feeder optional) Available also with steam coils and automatic steam temperature controls.

Hayes & Stolz INDUSTRIAL MANUFACTURING CO., INC.
3521 HEMPHILL ST., P. O. Box 11217, Fort Worth, Texas

COMPLETE ENGINEERING CONSULTING, DESIGNING SERVICE AVAILABLE



For you, we have shrunk the map... 'til there's a Bemis plant and sales office only a hop, skip and jump from you

But convenience and quick delivery are just part of the story. Bemis is also your best source for *everything* you need, packaging-wise. You can't beat that combination of service and complete packaging product range. In fact, you can't even tie it. So... why not join it?

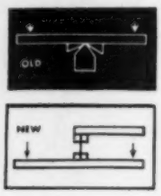
Bemis GENERAL OFFICES • 408 PINE STREET • ST. LOUIS 2, MISSOURI

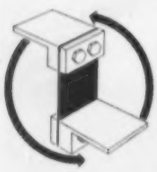
Thayer Scales' accuracy at work for Pillsbury

Like other high production mills, this Pillsbury plant at Lima uses Thayer Scales to provide its customers full weight without "safety losses".

The newest Thayer Filling Scale model N18C fills 10 one-hundred lb. bags per minute with unvarying accuracy. Materials are changed by simply adjusting one control. Write for an interesting new *Filling Scale Bulletin* and the name of your local representative.

THE THAYER PLATE LEVERAGE SYSTEM IS GUARANTEED *accurate for the life of the scale. This simple, patented system eliminates vulnerable knife-edge pivots by utilizing unchanging flexure plates. It is not affected by dirt, vibration or shocks. Its reliability is largely responsible for the highly successful operation of Thayer Filling, Batching and Checkweighing Scales.*





THAYER SCALE

AUTOWEIGHTION SYSTEMS FOR FILLING, BATCHING AND CHECKWEIGHING

THAYER SCALE CORP. • 9 THAYER PARK, PEMBROKE, MASS.

MONTANA DEMONSTRATION—The pigs and data in this picture dramatically demonstrate the progress made in feeding barley to swine. The comparison illustrated here was part of an experiment with various barley rations for fattening pigs.

Progress in Feeding Swine

BOZEMAN, MONT. — Progress made in feeding swine was demonstrated rather dramatically in trials conducted by the Montana State College animal industry department.

Barley was used as the grain in the experiment since surplus barley is available in the state. Also, there is a good potential market for Montana-produced swine in the state and on the West Coast.

Dr. O. O. Thomas, animal nutrition researcher, told of the experiment at the 1959 Montana Nutrition Conference.

The test was designed to show the differences in growth rate of pigs fed barley supplemented with alfalfa, meat meal or a protein supplement, or fed a pelleted ration.

A comparison of two of the lots in one group of pigs is shown in the accompanying picture.

The pigs used in this feeding trial weighed about 30 lb. at weaning. Among the rations fed were a barley and mineral ration and a pelleted barley-supplemented ration.

As shown in the photo, the pigs getting only barley and minerals weighed only 77 lb. when the pellet-fed pigs weighed 204 lb. The pellet-fed pigs gained 165% faster on 12% less feed than those getting only barley and minerals.

The pellet-fed pigs in this experiment gained faster on less feed than pigs on any other treatment. Feed wastage was a problem in all lots except those fed pellets.

Dr. Thomas pointed out that the demonstration showed the advantage in terms of weight gains of supplementing barley with a complete protein supplement or pelleting a barley-supplemented ration.

Improvements could be made in the rations used in the demonstration, Dr. Thomas said, but the results adequately demonstrate the progress made in feeding barley to swine in fattening rations.

Integration Question: Who Will Control It?

SHAWANO, WIS. — "We've got contract farming, and we're going to have more of it. The question is—who will control it?"

This question, asked by Dr. Marvin Schaars, head of the department of agricultural economics at the University of Wisconsin, brought four possible answers from the economist in an address before the Wisconsin Council of Agricultural Cooperatives meeting here.

Control can be held, he said, by government, labor, business or the farmer.

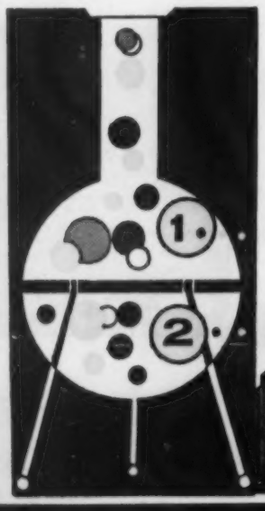
"Farmers are about ready to give up on the government, because it hasn't solved their problems," he said.

"The idea of labor taking over agriculture may seem fantastic," he stated, "but is it? It could happen if we ever get a government largely dominated by organized labor."

Business, he noted, is moving into contract farming.

The outlook for the farmer is that he will have control over his product only through collective bargaining power, Dr. Schaars said.

OUR "FORMULA" . . .



to serve the formula feed mixers

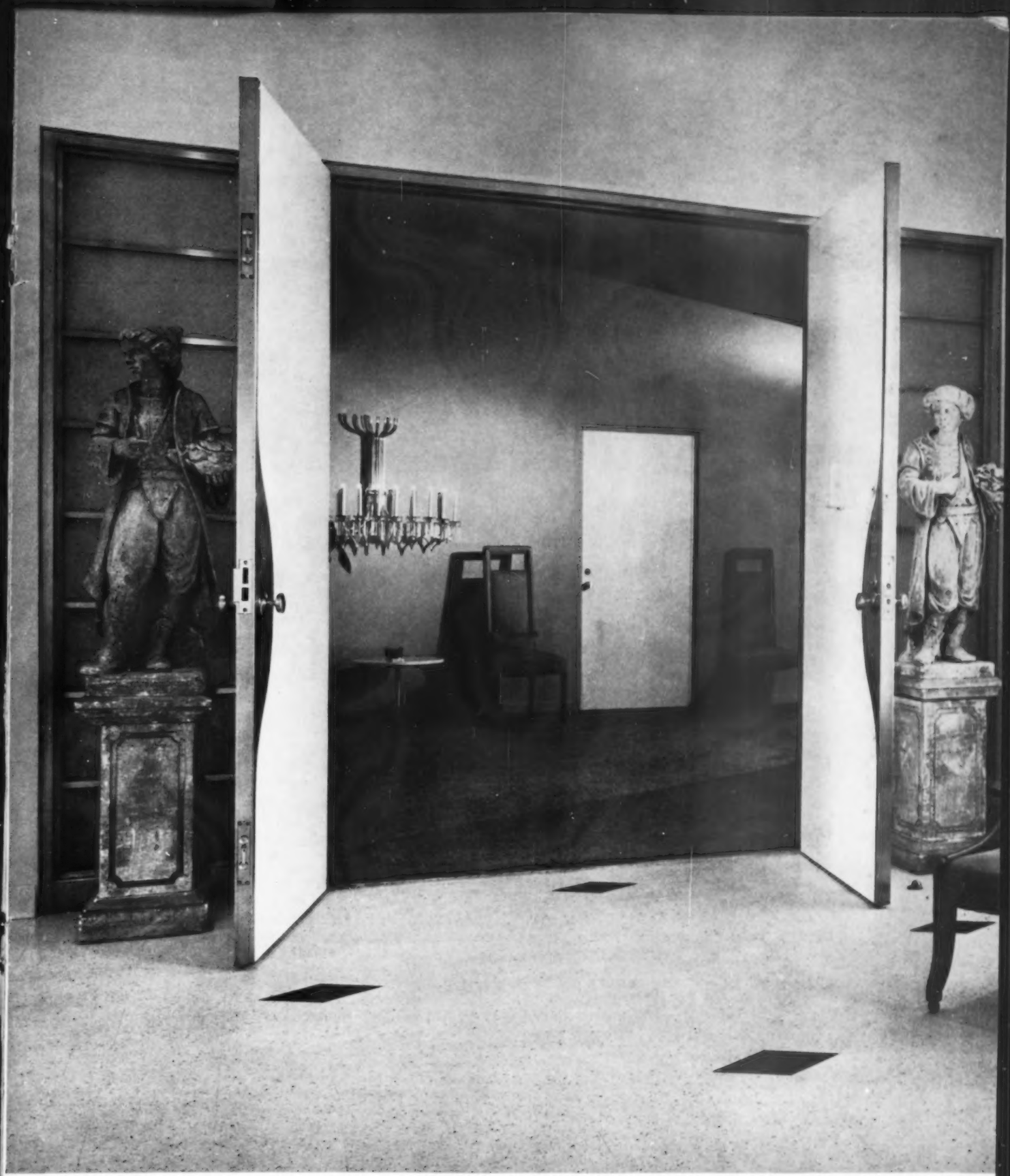
A QUALITY PRODUCT — *from the cream of the soybean crop*

SERVICE — *from our mill to yours . . . As Scheduled!*

D. F. E. Direct from Emporia

Here's a formula that works . . . For You!

KANSAS SOYA PRODUCTS CO., INC.
Phone 3000 Emporia, Kansas



WELCOME! You are cordially invited to visit our hospitality room, North Imperial Suite, 26th floor, Conrad Hilton Hotel, Chicago, Illinois during the combined AFMA Convention and 6th National Feed Industry Show, May 11, 12 and 13th, 1959. The suite will be open Sunday afternoon May 10th and throughout the convention. It will be closed during business sessions. We hope you will also drop by for a visit at our booths 145 and 146 at the National Feed Industry Show.

American Cyanamid Company, Agricultural Division, New York 20, New York

CYANAMID

Your servicemen are saying these things, too

What will medicated formula feeds *do* for your poultry customers? What *won't* they do?

Ever since you first introduced modern medicated feeds, you have been careful to point out their merits and, at the same time, emphasize that these feeds must never be considered substitutes for good management and sanitation.

Your servicemen have regularly carried this message out into the field.

Cyanamid is carrying the same message direct to your customers in national, sectional and state farm publications. On the opposite page is another in a continuing series of advertisements.

Cyanamid hopes that this advertising series may be helpful in persuading farmers to keep practicing the fundamentals of profitable livestock and poultry raising: Good management, strict sanitation, proper feeding.

American Cyanamid Company,
Agricultural Division, New York 20, N. Y.

Sound combination for profitable poultry raising:

Good management and medicated formula feeds

Today's successful poultrymen have learned through hard experience that these two fundamentals go hand in hand.

These men figure all profit angles. They know that a fraction of a cent can often make the difference between profit and loss. That's why they work closely with their feed manufacturer or feed dealer and rely on the counsel they get.

Medicated feeds

When antibiotics and other additives came along, feed manufacturers quickly saw a new way to benefit their customers. They researched and tested these additives and chose those they found best in order to bring you feeds that promote health and growth at the greatest economy to you.

Later, new experiment station trials revealed that some of the antibiotics at higher levels were effective in preventing or controlling specific poultry diseases. Manufacturers then raised the levels in their feeds and were permitted by the Federal Food and Drug Administration to make disease claims on their feed tags. This led to the now generally-accepted term "medicated feeds." Feed manufacturers, recommending these feeds to you, have been careful to point out what they might be expected to do and what they couldn't do.

What medicated feeds do

If you have been a poultryman for a number of years, you are well aware of the enormous benefits these medicated feeds have brought to you.

You've sent more pounds of meat to market by reducing losses from coccidiosis, chronic respiratory disease, synovitis and stresses in broilers. You've increased egg production through control of these same diseases plus blue comb in replacement flocks. You've expanded to year-round production of turkeys through better control of blue comb, sinusitis, blackhead, hexamitiasis and stresses.

For these reasons, you have welcomed medicated feeds and steadily increased your use of them. Most poultrymen have used these feeds wisely; unfortunately a few have chosen to consider them the *answer to all poultry problems* and have relied upon them to the exclusion of other important factors.

What medicated feeds won't do

No poultryman should place sole reliance on medicated feeds. Actually, they are *only a part* of over-all good management. And good management includes starting with good stock and maintaining proper sanitation, housing, ventilation, etc. These are *essential* to profitable poultry raising. Medicated feeds are not intended as a substitute. In fact, even the best medicated feeds may fail to show good results if management and sanitation are badly neglected.

Service men say the same

The service man, who comes out to see you from your feed manufacturer or feed dealer, tells you all these things. He is working for your interest as well as his company's. Most feed manufacturers are glad to offer you soundly-written, full-of-fact pamphlets and booklets that help you solve management and sanitation problems – and tell you *how* and *when* to use medicated formula feeds. You will find this literature constantly reminding you that good management and medicated feeds *must work together* for genuinely successful results. It will pay you to keep this literature on hand – ask your feed manufacturer, feed dealer or service man for it.

American Cyanamid Company, Agricultural Division, New York 20, New York.

. . .

The statements on this page express the sincere beliefs of American Cyanamid Company, producers of AUREOMYCIN® *chlortetracycline,* ARZENE* *arsenosobenzene,* MEGASUL® *nitrophenide and* ENHEPTIN®-*A 2-acetylamino-5-nitrothiazole . . . all used in manufactured feeds.*

**Trademark*

CYANAMID

For Better Pellets...

THE SWITCH IS TO PACO

Here's the success story of the feed business . . . what dealers and customers* are saying after they've switched to pellets made from Paco!

"They form better . . . with the glossy and slick look I want."

"Moisture doesn't affect my Paco pellets."

"Fines are down 38%!"

"Customers tell me Paco pellets taste better."

"And smell? Man, they smell good!"

"Production is up a healthy 6%."

"Nobody told me it was the only binder on the market that was nutritious, too . . . but it sure is."

These are the facts! Unsolicited testimonials are proving that Paco means better pellets for your customers . . . regardless of other ingredients in the formula! Stock and sell Paco for bigger profits from pellets!

**names sent on request*

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Manager for Hawaii Named by Cyanamid

NEW YORK—Eldon F. Loats has been appointed to the newly-created post of resident manager in Hawaiian Islands for American Cyanamid Co.'s agricultural division, it has been announced by B. F. Bowman, division marketing director.

Eldon F. Loats

Mr. Loats will be responsible for the sale and distribution of all products of the agricultural division sold in the islands. His headquarters have been established on the island of Oahu.

A graduate of the University of Dubuque (Iowa), Mr. Loats joined Cyanamid in 1952 as veterinary sales representative for Lederle Laboratories division in the Midwest region. He became field sales representative for Acronize, a preservative extensively used on chickens, in 1955.

In 1957, he was appointed as manager of sales training for the farm and home division, now merged into the agricultural division. The following year he was made administrative assistant to C. D. Siverd, assistant general manager of the agricultural division.

Oil Chemists' Society Names New Officers

NEW ORLEANS—Election of officers of the American Oil Chemists' Society for 1959-60 was announced at the 50th anniversary meeting of the society here recently. Results of mail balloting were disclosed by the chairman of the nominating and election committee.

President, without opposition, will be N. D. Embree, director of technical operations, Distillation Products Industries, Rochester, N.Y.

Dr. Embree served as vice president and chairman of the membership committee last year. Previously, he was a member of the society's governing board, a member of the vitamin committee and chairman of the committee on local sections.

He joined Eastman in 1934 and became assistant director of research at DPI in 1939 and director in 1948. He was appointed director of technical operations in 1957. Dr. Embree is well known for research in fats, fat-soluble vitamins and vacuum distillation. He serves on several scientific groups including the industrial liaison panel of the food protection committee of the National Research Council.

Other officers are: R. W. Bates, research associate, Armour & Co., Chicago, vice president; R. C. Stillman, head, analytical section, technical service, research and development department, Procter & Gamble Co., Cincinnati, secretary, and A. F. Kapecki, secretary-treasurer of Wurster & Sanger International, Inc., Chicago, and secretary of Wurster & Sanger, Inc., Chicago, treasurer.

Members-at-large will be A. R. Baldwin, director of research, Cargill, Inc., Minneapolis; J. C. Harris, assistant director of research, Monsanto Chemical Co., Dayton, Ohio, and K. F. Mattil, associate director of research, Swift & Co., Chicago.

Serving with these seven officers will be the most recent four past presidents: J. C. Konen, vice president, research, Archer-Daniels-Midland Co., Minneapolis, 1958; H. C. Black, associate director of research, Swift & Co., Chicago, 1957; T. H. Hopper, chief, industrial crops laboratory, Southern Regional Research Laboratory, New Orleans, 1956, and W. A. Peterson, manager, quality control, household products division, Colgate-Palmolive Co., New York.

HOLDS GRAND OPENING

HAWARDEN, IOWA — A grand opening for a new grinding and mixing plant and an appreciation day for progress made since 1945 during the ownership of H. M. and Ralph Brown were held at the McNally Grain Co. near here recently. A grinding and mixing plant was completed last winter. It includes a 20-in. mill and a three-ton vertical mixer.

SOLUBLE NUTRIENTS, INC.

fermenters of solubles since 1952

"VIVO" BRAND ANIMAL AND POULTRY FEED SUPPLEMENTS

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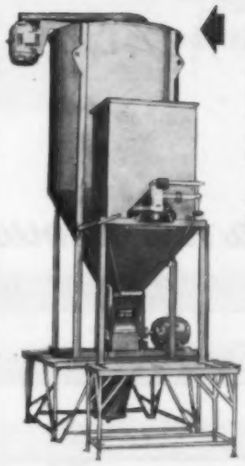
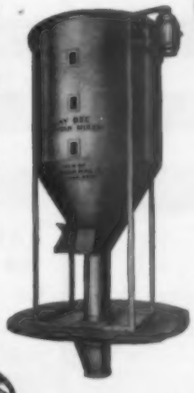


JAY BEE "Pig and Poultry" Feed Unit

Make your own formula feed the way you want it—when you want it—as much as you want. 7½ H.P. hammermill, weight hopper and scales, vertical mixer in 3 sizes—1 ton, with 5 H.P. motor; 1½ ton, with 7½ H.P. motor; 2 ton, with 10 H.P. motor. One-man operation—requires only 6'x10' space—capacity up to 22 tons per day.

JAY BEE "Puritan" VERTICAL FEED MIXER

For consistently high-quality, high-volume production. From ½ to 3-ton capacity, 3 to 15 H.P.; overall diameter 48" to 72"; above-floor height 108" to 168".

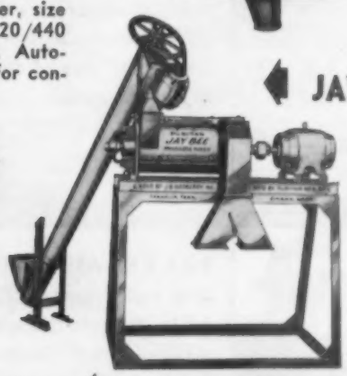


JAY BEE "Puritan" HORIZONTAL FEED MIXER

A heavy-duty unit built for years of dependable service. From ½ to 2-ton capacity, 10 to 40 H.P. Molasses mixing equipment and floor level concentrate conveyor optional on all models.

JAY BEE Drag Feeder

A sturdy, efficient feeder, size 14'x20", with 1½ H.P. 220/440 volt, 1800 RPM motor. Automatic trip relay switch for continuous operation.



JAY BEE "Puritan" No. 4 Molasses Mixer

Puts molasses into the feed instead of feed into the molasses—mixes perfectly under all conditions. Capacity 6,000 to 12,500 lbs. per hour—10 H.P. mixer, 3 H.P. pump, 1½ H.P. feeder screw.

JAY BEE HYDRAULIC TRUCK HOIST

Makes bulk unloading simple, safe, efficient, economical—handles pick-ups and long wheelbase trucks—dual cylinders for extra power—maximum lift to 45 degrees. When not in operation, platform is flush with ground level, becomes usable working space.

For complete information about the entire Jay Bee line, see your Sedberry distributor or write

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Honeggers' can help you...

DOUBLE YOUR TONNAGE

Watch this area each month for a new dealer who has Doubled His Tonnage and Tripled His Profits on the Honegger Program.

Clarence Schmieding, Manager
SEWARD CO-OP OIL COMPANY
Seward, Nebraska

To PROGRESSIVE FEED DEALERS

I've got to admit that we were pretty skeptical last summer when the Honegger man told us that we could double our tonnage with the Honegger Complete Package Program.

We aren't skeptical any longer. In the nine months we have been selling Big "H" Feeds, our sales have more than tripled. We now sell them exclusively.

When Honeggers' asked us to participate in two trainload shipments from their Lincoln plant in February, local acceptance was wonderful. On the first trainload we shipped two cars . . . and placed another order on the second trainload . . . all in one month.

We also like the extra profits from our sales of Big "H" Livestock and Poultry Equipment, Honegger Farm Buildings and the National Champion Honegger Layers.

With fine products like these and an exclusive trading area in which to sell them, we think we have the finest program available anywhere.

If you are looking for a way to increase your sales and your profits, why don't you get in touch with the Honegger man in your area!

Clarence Schmieding
SEWARD CO-OP OIL CO.

No other feed company in America has so much to offer! →

EXCLUSIVE TERRITORY protection gives the Honegger Dealer plenty of room to grow. A piddling dealer at every little crossroads is not Honeggers' idea of effective distribution.

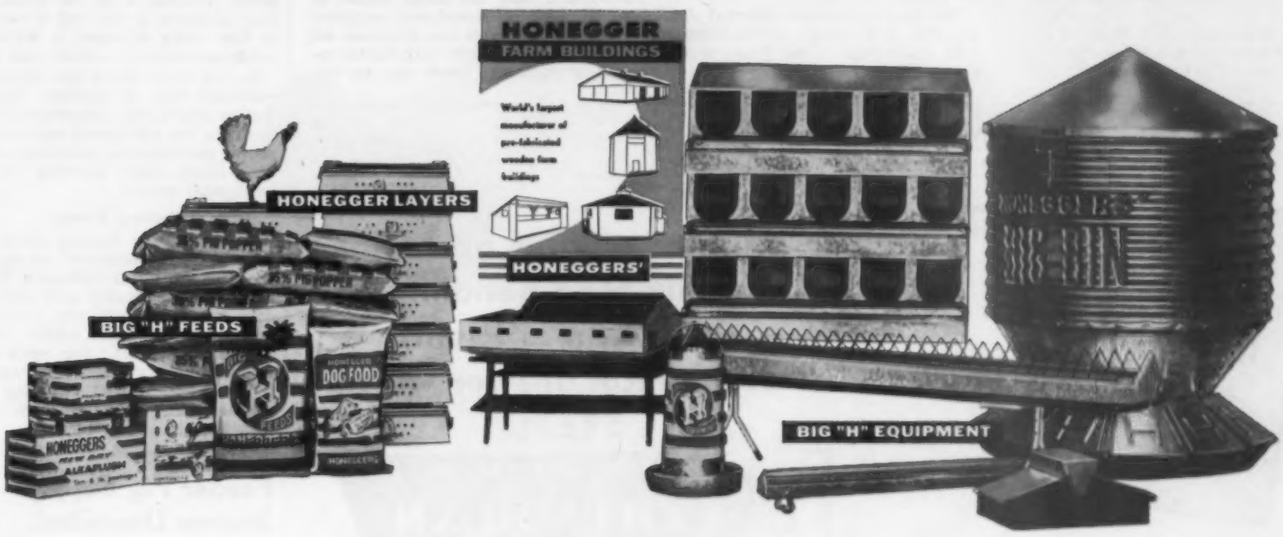
DEALER TRAINING schools at Fairbury-Forrest and monthly district meetings help Honegger dealers and their sales personnel make sales through service. Their know-how and self-confidence makes selling easy, more effective.

SALES ASSISTANCE from well trained, enthusiastic district managers produces new business and keeps Honegger dealers inspired. Product specialists, such as building and equipment salesmen, help dealers close big sales.

LOCAL PROMOTIONS and "Planned Selling" that move 75-150 tons of feed out of the dealer's stores are not uncommon for Honegger dealers—with bulk of business on cash basis, too. Honeggers help plan and man open houses, hay-makers and ice breakers.

TRIPLE YOUR PROFITS

What others have done....you can do also WITH HONEGGERS' COMPLETE PROGRAM



➔ Write, phone or wire collect for complete details . . . *DAY or NIGHT*. . . Do it today!

SINGLE SOURCE OF SUPPLY gives Honegger dealers over 190 products sold by no one else in his territory. Combination shipments reduce freight costs, cuts dealer's equipment inventory because you are only a few days away from Honeggers' warehouse.

HONEGGER RESEARCH FARM has attracted over 40,000 visitors in past ten years. Practical research and convincing demonstrations here keep dealers and customers sold on Honegger know-how, and produce more dealer profits!

PATRONAGE DIVIDEND gifts make real boosters of farm wives and kids. Coupon-saving customers get valuable premiums direct from Honeggers without bother or expense on dealer's part. Result: terrific customer loyalty . . . REPEAT PROFITS!

BULK FEED SERVICE at Honeggers' employs king-sized fleet of hopper cars and modern bulk trucks. Honeggers' bulk farm bins are profit-makers that help dealers sew up business.

K-State Feed Men To Develop Uniform Management Principles

MANHATTAN, KANSAS—Officials of Kansas State University and Kansas Formula Feed Manufacturers, meeting recently in a joint session at the university, agreed to explore mutual problems in feeding poultry, hogs and cattle.

A proposal by Jack Grubb, president, KFFM, asking Kansas State to work with the association in developing a set of standards for management practices in the care and feeding of poultry and livestock was accepted by Dr. Harold Jones, head, Kansas State Extension Service, "because we fully realize the impact that feed salesmen have on Kansas farmers."

Mr. Grubb said that during a joint planning session with officials of Kansas State for a forthcoming formula feed conference the following resolution was submitted by KFFM:

"In an effort to better serve Kansas poultry and livestock interests, the KFFM officially request that the planning committee for the 15th Kansas Formula Feed Conference allot a portion of time during the next conference to be devoted to the subject of Uniform Management Practices in the feeding of poultry, swine and cattle."

Dr. Jones stated in his acceptance of the proposal, "We are certainly aware of the situation facing Kansas farmers. Without putting into practice sound management principles our farmers cannot realize full benefits from the new advances in modern formula feeds."

He said a committee will be appointed to work with the feed industry group.

The joint committee selected Jan. 4-5, 1960, as the dates for the formula feed conference to be held on the Kansas State campus.

Oklahoma State Gives Report on Alfalfa Work

STILLWATER, OKLA.—In an Oklahoma State University study of alfalfa hay and dehydrated alfalfa meal in milo and sorghum silage rations for fattening steer calves it was found that feed required per hundredweight gain or feed costs were not consistently reduced when alfalfa hay or dehydrated alfalfa meal pellets replaced from one fourth to one half of the cottonseed meal.

Oklahoma State researchers reported also that there was no evidence of "unidentified factors" in alfalfa under the conditions of their study. They said adding alfalfa ash to the basal ration in one trial resulted in no improvement in steer performance.

It is believed, according to the researchers, that the basal ration of rolled milo, cottonseed meal, sorghum silage and minerals was adequate for fattening steer calves, with the exception of carotene. There was no evidence, they said, that the dehydrated product was superior to good quality alfalfa hay when fed at the same protein level.

For the tests, alfalfa hay was substituted for one fourth and one half of the cottonseed meal, and dehydrated alfalfa meal pellets for one fourth, one half and all of the cottonseed meal on an equal-protein basis in fattening rations containing milo and sorghum silage for steer calves. It was reported that such substitutions failed to consistently improve gains and feed efficiency and had little effect on carcass quality.

In three of the four trials, there was some evidence of vitamin A deficiency in steers fed the basal ration with no alfalfa. Chemical analyses revealed that the silage was relatively low in carotene in trials where improvement from feeding alfalfa was noted. Vitamin A in the blood and liver of calves at the end of two out of four trials indicated a deficiency condition where no alfalfa was fed.

In two trials where the silage was relatively high in carotene content, neither alfalfa hay, dehydrated alfalfa meal nor the addition of carotene improved performance, according to the Ohio State report covering the experimental results.

Feeding Period

Length of the feeding period appeared to be important, as no evidence of vitamin A deficiency on the basal ration appeared until after 100 days on feed. "Fattening periods longer than 165 days might lead to serious deficiencies," the researchers commented. "For insurance purposes, it would appear that including 1 lb. per head daily of either form of alfalfa would be desirable."

Feeder Pig Supply System Described

INDIANAPOLIS, IND. — A new feeder pig supply system, inaugurated by Producers Marketing Assn., was described recently by W. R. Cummins, general manager, in an address before members of the Indianapolis Farmers Club.

Mr. Cummins said 1,000 pigs a month may be handled in the near future. The plan is aimed, he said, at increasing volume of feeder pigs from southern Indiana farms, rather than obtaining large numbers from states south of the Ohio River, as has been the practice.

Producers Marketing makes arrangements with farmers to set up a breeding schedule of at least 10 sows that have met tests for type and health. The agency agrees to buy pigs farrowed from these sows. It then sells the pigs to farmers in other parts of the state for fattening to market weight.

Thus, producer who agrees to the plan has an assured outlet for his pigs when they reach 40 lb. Operations range from 10 to 100 sows in several southern counties, although the system has just been started in the last few months, Mr. Cummins said.

Pig farmers are required to deliver the animals to a central collection point in their county at regular intervals.

NEW MILL ADDITION

GIBBON, MINN.—A new addition to the Gibbon Farmers Elevator Co. will house bulk bins and will increase the elevator's capacity by 100 tons. The addition is part of an expansion program which includes the installation of two mixers, improvement of the loading facilities and addition of a bulk delivery truck.

EXPAND?
MODERNIZE?
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Whatever your problem in bulk feed handling, there's an efficient, economical answer with STEEL

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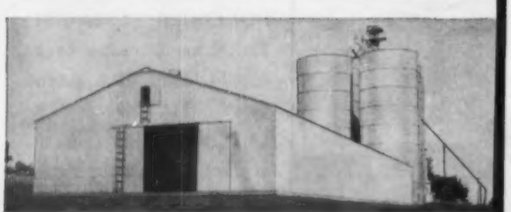
GRAIN ELEVATORS Big or small — complete from plans fitted to your location, with Columbian "Look Ahead" engineering for your future growth. One tank to expand . . . or a face-lifting job to get competitive with present facilities . . . Columbian equipment and engineering can help you. Find out how now.



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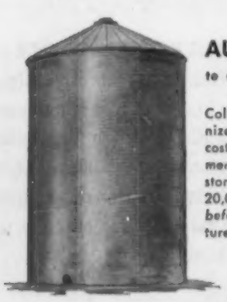

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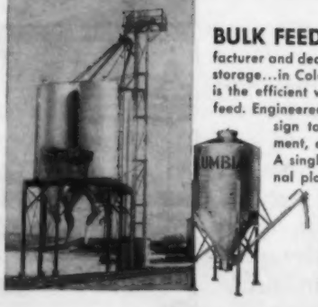
Columbian corrugated, galvanized BIG granaries go up fast, cost little, meet CCC requirements, let you cash in NOW on storage needs. Sizes up to 20,000-bu. capacity. Be ready before next harvest. Get literature and prices now.



BULK FEED Mill storage...feed manufacturer and dealer storage...on-the-feed-lot storage...in Columbian steel bulk feed tanks is the efficient way to handle and use bulk feed. Engineered for easy use, there's a design to fit your handling requirement, a size to fit needed volume. A single tank or a complete terminal plant will save you labor and cost when Columbian engineering and Master-Crafted steel equipment is used. Get the whole Columbian bulk feed equipment story. Write us today.

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Great for livestock. And poultry, too. Matter of fact, there's nothing else better. Cura-phos® is ground phosphate rock from the island of Curacao. It comes from no other place in the world. It's a rich, natural product obtained from nature's stockpile of mineral wealth. Highest quality. Highest availability. Guaranteed analysis — 14% phosphorus and 31% calcium, and no more than 0.5% fluorine. Cura-phos helps build the feeds that help grow the profits for all poultry and livestock. No wonder over one million tons have been gobbled up by the feed industry.

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IDEAS TO HELP YOUR CUSTOMERS

Enterotoxemia Treatment

Thrifty young lambs and calves infected by enterotoxemia can be saved with prompt treatment, says Dr. F. A. Hall, Purdue University extension veterinarian.

Dr. Hall reports that veterinarians can give an antitoxin, which is effective in most cases if administered soon after symptoms appear. There is also a vaccination effective as a preventive of enterotoxemia, he says.

The disease may affect young lambs and calves during the suckling age and feeder lambs and steers while on growing and fattening rations.

Dr. Hall explains that young animals which apparently were normal at night may be found dead the following morning. Diseased animals may be listless, off feed and show nervous symptoms, with possible paralysis.

The disease, he says, is caused by a toxin produced by a germ within the animal. The condition sometimes is known as "overeating disease."

◆

Laryngotracheitis

Here are six rules which the University of Massachusetts recommends to the state's flock owners for control of infectious laryngotracheitis:

"1. Do not purchase stock that has recovered from the disease. Healthy appearing carriers are almost certain to remain.

"2. Avoid purchasing stock vaccinated for laryngotracheitis. Although carriers do not develop in properly vaccinated stock, it is difficult to be certain that vaccination was properly done.

"3. Submit specimens to a diagnostic laboratory if a rather acute respiratory disease occurs which causes mortality.

"4. Dispose of all dead birds by deep burial, incineration or burial pit.

"5. Vaccinate for infectious laryngotracheitis only if advised to do so by the department of veterinary science.

"6. Do not return any live birds to the farm from shows or contests. The poultry show has been one of the most important means of spreading the disease in the state in recent years."

◆

Feeder Pig Ideas

How much money can a producer make farrowing and selling 20-40 lb. feeder pigs?

The answer, according to Prof. Paul Hasbargen, University of Minnesota extension farm management specialist, depends on his production efficiency, value of feeds used and price received per pig.

He notes that litter size is more important in a feeder pig operation than in normal swine production because total costs remain about the same regardless of the number of pigs sold per sow.

Prof. Hasbargen gave this example to illustrate his point: If the producer got six pigs per litter and sold them for $12 each, he'd get about $3.70 per pig—based on average feed and operating costs. But if he could produce 10 pigs from the same sow, his return would be about $6.40 per pig—a sizeable increase in profit with little increase in labor.

Efficient utilization of feed is important, too. Prof. Hasbargen says the producer can lower feed cost as well as increase litter size by limiting the amount of feed during gestation. He referred to experiments which show that 4.5 lb. of a good ration is all that is needed daily per pig.

Heavier feeder pigs, he says, usually bring a price premium, but additional feed costs, weight loss of the sow and the time loss in breeding back the sow must be charged against this premium.

Prof. Hasbargen says the producer should know when to sell his old sows. "Plan to sell them in mid-summer, the period of seasonally high hog prices," was his advice.

◆

Summer Dairy Feeding

Some of the advantages and disadvantages of different methods of summer dairy cow feeding were recently spelled out by Prof. W. F. Hueg, extension agronomist, Univer-

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from farrowing through finishing...

for breeding stock: for breeding, gestating, lactating sows

give top feed performance at reduced cost

With KREPRO and HOPRO you can build your own swine feed tonnage with a "life-cycle" program that meets the changing nutritional needs of growing swine—at unusually low cost.

sity of Minnesota. Any of the systems, he says, can result in good milk production, as experimental trials have shown.

Pasture—With intensive rotational or ration-a-day grazing, the dairy farmer can feed his whole herd on between a third and 1½ acres for the season. This, however, calls for careful management and for more labor than would letting the cows continuously graze a larger field. An advantage over continuous grazing is that rotational grazing requires a smaller area and wastes less feed.

"Green chopping" (also called "sollage" and "zero grazing")—Keeping the cows in a lot and feeding them fresh chopped forage daily provides a good supply of forage throughout the season, with a third to one full acre of forage necessary for each cow. But this system requires a tractor, chopper and self-feeding wagons or bunks. And these chores require daily attention—making the method costly for small herds. A herd of 25 cows is considered the minimum for such an operation.

Stored hay and silage—The dairy farmer can get the most uniform control of feed for the season by confining his herd to dry lot and feeding them stored hay and silage. He can feed cows this way with from 1½-3 acres of forage apiece for the whole year.

He'd need a chopper or baler early in the season and should have self-feeders for such a feeding system. And, as with green chopping, manure can become a problem with dry lot feeding and probably would require a paved barn lot. This plan, too, is feasible, in general, only for herds of more than 25 cows.

FEED FIRM CHARTERED

TOPEKA, KANSAS—Russell (Kansas) Grain & Feed Co., Inc., has been granted a charter. Robert F. Miller, Salina, has been named resident agent. Capitalization of $100,000 was authorized.

New Egg Marketing Program in Georgia

TIFTON, GA.—Operation of a new egg marketing plan for this area began recently when the first delivery of 2,400 doz. eggs was made here. The new program is expected to involve 100,000 laying hens within a year or two.

The eggs, produced by 10 or more operators in this area, were picked up by Lindsey-Robinson & Co., Roanoke, Va., manufacturer of Fair-Acre feeds, and transported to the company's processing plant in Farmville, Va., for processing and distribution to markets.

The egg program was started earlier this year when W. I. (Bill) Bowen and Perry McCranie, both of Tift County, organized Bowen-McCranie Co., to serve as franchise representatives for the Fair-Acre certified egg program.

Producers participating have agreed to sell all their eggs to the Lindsey-Robinson company. The eggs will bring premium prices based on the Georgia market at time of shipping.

The feed company provides feed concentrate which is mixed with Tift County grain by Tifton Feed & Milling Co. and distributed to the participating farmers through the Bowen-McCranie Co.

Mr. McCranie and Mr. Bowen have some layers of their own in the program, and have enrolled 10 egg producers who, when their hens are old enough to produce, will have a total of 50,000 layers.

The Tift men announced plans to put in 20,000 layers of their own. Some of these chicks are now being grown out, and will be ready for production within a few months.

The truck picks up the eggs once a week now, and later may come twice a week. The same truck gathers eggs from other Georgia towns where the Fair-Acre plan is in effect.

Eggs in this area are brought to the South Georgia Ice Co. plant here to await loading.

LAMAR KISHLAR HONORED — Lamar Kishlar, manager of the special ingredients purchasing division, Ralston Purina Co., St. Louis, receives a special marine anemometer and wind-direction indicator from George R. Wallace, Morehead City, N.C., in the photo. The presentation was made in behalf of the National Fisheries Institute in New York at the institute's recent annual convention where Mr. Kishlar was given a testimonial dinner by H. J. Baker & Bro., New York. He was honored for "the valuable service he has rendered the fishing industry in the form of technical advice for quality control, improvement of products and better marketing procedures." Mr. Wallace, in presenting the gift, spoke of Mr. Kishlar's "friendly, cooperative counsel to his suppliers and his fair consideration of them."

for creep feeds and pig starters... krepro

For pigs up to 50 lbs., KREPRO supplies all fish, whey, and fermentation factors,* vitamins, antibiotics, and trace minerals — in amounts needed for fast starting and maximum feed efficiency. Yet KREPRO may actually **save you money** — it contains saccharine and thus can save up to $20. per ton on sweetener costs.

for pigs over 50 lbs... hopro

Economically formulated, HOPRO provides all needed micronutrients, growth and fermentation factors* — for more and better lean-meat-type-hog production and reproduction. Available in three forms so that you can rotate antimicrobials for development of natural immunities and avoidance of drug resistance: HOPRO AB (contains penicillin and bacitracin); HOPRO 3N (contains 3-nitro-4-hydroxyphenylarsonic acid); and HOPRO R (no antimicrobial guarantee).

It has been four years since Borden first proposed Life-Cycle feeding with KREPRO and HOPRO. Are you upgrading your feeds with this **proven** feed program?

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Serving the Feed Trade For Over 20 Years

TIME SAVER FOR FEED FIRMS—Loading ear corn is one of the many jobs handled by a hydraulic scoop at Pine Island (Minn.) Farmers Elevator Co. The equipment speeds work for the firm and has been found practical for many former "muscle" jobs which come up daily at local feed firms.

Local Feed Firms Find Wide Uses For Tractor Scoop

By Harold Severson

PINE ISLAND, MINN.—The scoop shovel, long the badge of office for grain firms, has given up some ground to tractor-mounted scoops in recent years.

Ed Schulte, manager of the Pine Island Elevator Co., says the tractor-mounted scoop at his firm does the work of 10 men with scoop shovels, and in less time. His firm's uses for the equipment are an indication of how local feed businesses are eliminating some of the old-fashioned "muscle work" around the buildings.

The Pine Island firm finds its tractor and scoop particularly useful in the moving of ear corn, loading coal and removing snow, he said.

"We move a great deal of ear corn," said Mr. Schulte, who is nearing his 25th year as manager. "Truckers call for corn regularly. It is dumped on a concrete slab about a quarter of a mile from the elevator, and our hydraulic loader really saves a great deal of work there. As long as the elevator handles ear corn, the loader is indispensable."

The hydraulic loader, which costs about $1,100, is mounted on a used tractor. It handles about 6 bu. of ear corn or 500 lb. of coal in one bite.

Harold Durst, an office employee who frequently takes over the loader when other employees are busy, used the scoop to load a truck with stoker coal after a heavy snowstorm.

"It would have been a real chore if it hadn't been for this hydraulic loader," he commented.

Fifteen minutes after he had tackled the coal-moving job, Mr. Durst was heading for a pile of ear corn. When he finished there, he cleaned out some of the flat storage bins.

"We buck the shelled corn up to an auger and then elevate it into the trucks," he said. "When I think of how much muscle work was required before we got this loader, my back aches."

Another use for the bucket and tractor is moving wagons which farmers use to transport grain to be ground for feed. In many cases, the farmers arrive with their wagons early in the morning, detach them from their tractors or trucks, and then return late in the afternoon for the ground feed. The tractor is handy for moving the wagons out of the way.

LOADING COAL — Harold Durst, Pine Island (Minn.) Farmers Elevator Co., shown loading coal with a tractor-mounted hydraulic scoop, points out another of the many uses local feed firms are finding for this kind of power equipment.

Computers Used in Poultry Breeding Work

PLEASANT HILL, MO. — Geneticists at Colonial Poultry Farms, Inc., Pleasant Hill, have developed methods for handling research data utilizing high-speed electronic calculators, the firm points out.

The calculators are "fed" data on the development and evaluation of new lines and strains of birds, which is collected by the research staff. The information is summarized into intelligible form by the calculators, and then used by geneticists in designing new breeding methods.

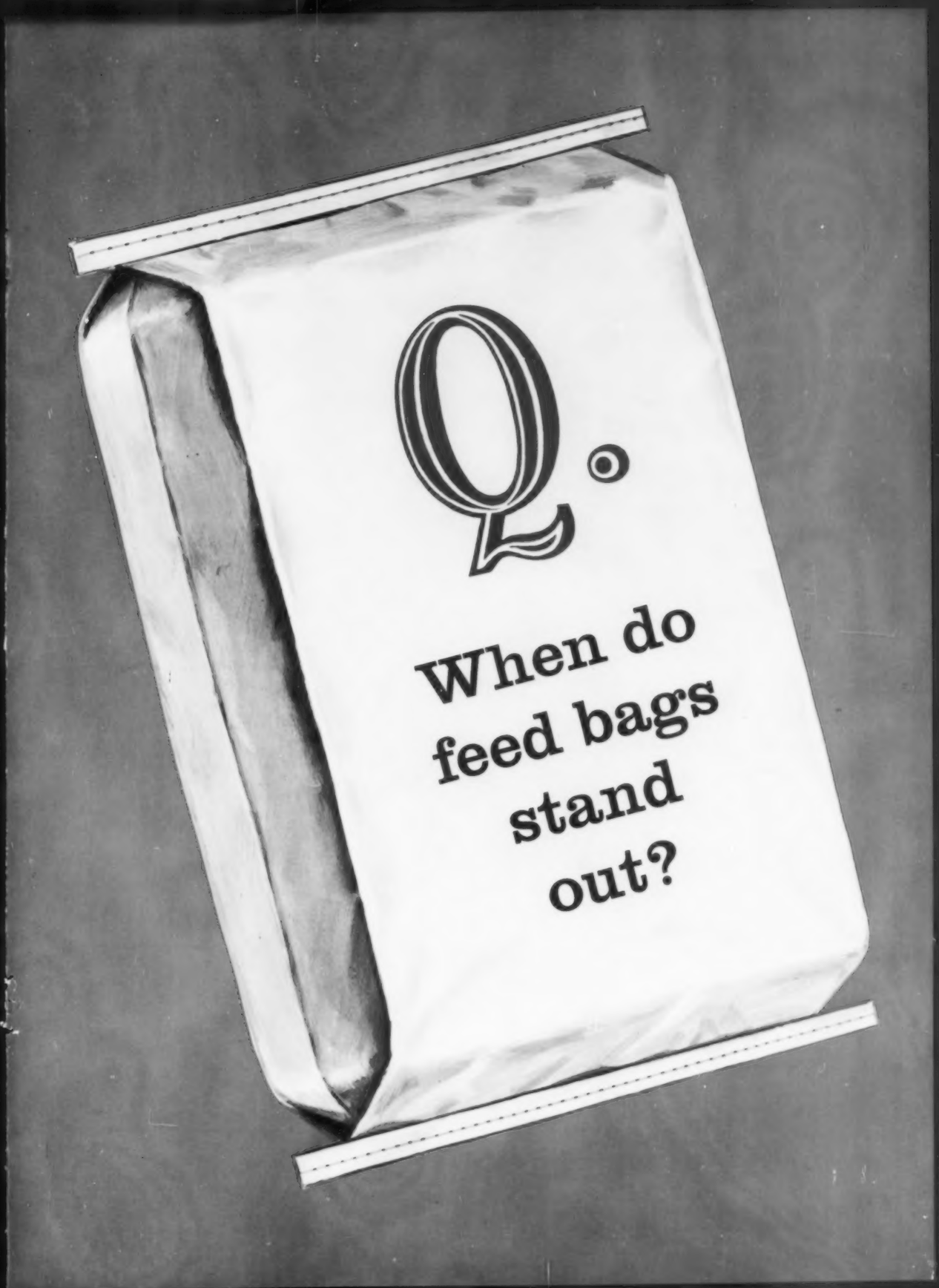
The research data must be translated into "machine language," which is called "programming." The program tells the machine which data (punched on IBM cards) is which, where to store it in its "memory," which calculations to do first, where to find the stored data and where to store the answers it gets and the form in which to give the results back to the geneticists.

From information turned out by the electronic computers, the best possible combination of many lines can be determined, and the genetic basis for more efficient breeding methods is found, the company says.

New Poultry Plant

JASPER, ALA. — A new poultry processing plant at Jasper was cited recently at Alabama Industry Days as one more example of how fast the poultry business is gaining ground in Alabama.

The new Jasper plant will employ 400 persons with an annual payroll of $1,250,000. It will process more than 37 million chickens annually for marketing in 38 states and in South America. Nearly $16 million is invested in the plant.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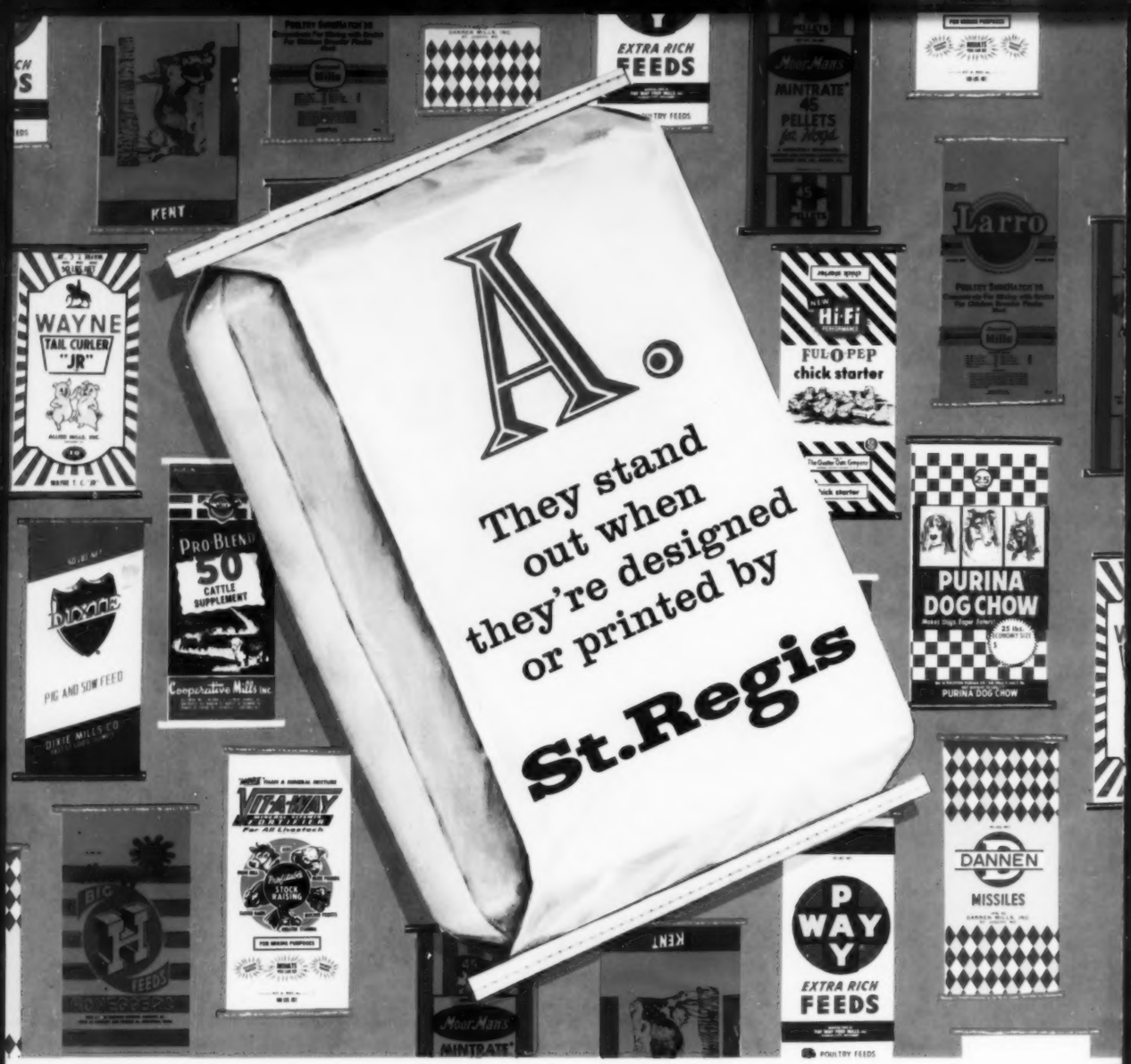

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Purina Sets Opening For Ottumwa Plant; To Serve 33 Counties

OTTUMWA, IOWA—Plans for the public opening of the new Ralston Purina Co. mill here were announced recently by Harry I. Van DePol, Des Moines, division sales manager for the firm.

He said the new feed mill—Purina's 54th manufacturing plant—will open to the public Sept. 26. It will distribute feeds to dealers in 11 northeast Missouri and 22 southeast Iowa counties.

Discussing the plans at a Chamber of Commerce meeting here, Mr. Van DePol said he has seen three different complete cycles in the feed business during his 18 years with the firm.

In 1930, he said, the firm had 1,500 salesmen and nine mills. Now it has 675 salesmen and 54 mills. The Ottumwa mill will have an annual capacity of 100,000 tons.

Mr. Van DePol discussed the trend toward larger farm units and "big business" methods on the family farm. The service feed dealer, he said, exists because he can contribute to the efficiency of the modern livestock farmer.

"The dealer's service to the farmer can be regular, scheduled, efficient and inexpensive," he said. "As the farm acquires increasingly efficient business methods, the farmer needs business services."

He said the dealer will also provide management counsel, breeding information and marketing information to customers. He also stated that the Ottumwa mill is only one phase of the company's expansion in this territory. Many dealers are also building sizeable mixing and formulating plants, it was indicated.

About integration, Mr. Van DePol said Ralston Purina is "swimming against this current." The company does not own a single animal or bird, he said.

"Our policy will continue to be against integration so long as the American farmer wishes to remain a free, independent, private businessman," he declared.

Since construction has begun on the Ottumwa mill, there has already been discussion of expansion plans, he said. One of these is toward maintaining a market in Ottumwa for locally-produced grains.

A. E. Staley, Chemical Firm Plan to Merge

DECATUR, ILL.—The managements of A. E. Staley Manufacturing Co., Decatur, and U B S Chemical Corp., Cambridge, Mass., have agreed on a merger of U B S into Staley, it has been announced. The merger is to be made on the basis of the exchange of one share of common stock of Staley for each 1¾ shares of common stock of U B S. Preferred stock of U B S is to be retired prior to the merger.

U B S, formerly Union Bay State Chemical Co., Inc., has as its principal products chemicals used in liquid floor wax and for finishing, combining, cementing, impregnating and processing leather, fabrics, rubber and other such materials. It has its main plant, laboratories and technical offices in Cambridge, as well as a technical laboratory near Greenville, S.C., a new polymer plant at Lemont, Ill., and a polymer plant and laboratory facilities under construction at Marlboro, Mass. Its net sales for the year ending Dec. 31, 1958, were $4,742,108. Net profit was $176,722.

Staley announced that the merger will require the issuance of approximately 102,000 shares of Staley common stock presently authorized but not outstanding.

Consummation of the merger is contemplated for this summer and is subject to approval of the stockholders of both companies and to completion of legal and other studies now under way.

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DES MOINES—Supersweet Feeds plant here has been awarded the 1958 Robin Hood safety plaque by International Milling Co., the parent firm, for a full year without a lost time accident.

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Pros, Cons of Using Started Pullets Discussed at New Hampshire Meeting

By RICHARD WARREN
University of New Hampshire

DURHAM, N.H.—A lively discussion of the advantages and disadvantages of using started pullets was one of the highlights of the recent spring meeting of the New Hampshire Poultrymens Assn. here.

More than 200 poultrymen came early and stayed late to hear discussions on started pullets as well as contract market egg production, the New England Egg Producers Assn., "stimulighting," feeding programs and other practices and problems.

STARTED PULLETS—Dr. N. M. Frazier, extension veterinarian at the University of Connecticut, estimated that 50% of the pullets raised in Connecticut will be raised on somebody else's farm. This practice has led to many disease problems, Dr. Frazier said. Among the diseases brought in with pullets are leucosis, blackhead, capillaria worms, laryngotracheitis and hepatitis, he said.

"Hepatitis has been a particularly important problem resulting from this practice because of its slow rate of spread," Dr. Frazier said. "The started pullet program is contrary to good disease control practice. It works both ways. That is, the pullets brought in can bring trouble to birds on a farm, and the birds on the farm can spread it to the pullets."

Frequently, he commented, birds are raised on several farms for one buyer, raised on farms where there are older birds, or two age groups, and the buyer doesn't know the vaccination program followed in raising the birds. This all aggravates the problem, he said. He advised buyers to find out where the pullets come from and to put them on clean litter when they come in.

Other Problems

A different point of view was given by Edward S. Walford, Hall Bros. Hatchery, Wallingford, Conn., who said he thinks the average specialized pullet grower does a better job than the average poultryman. He feels, he said, that it results in a sounder and stronger vaccination program and less leucosis.

"There are problems," he went on. "A large percentage of the poultrymen won't order ahead. This results in speculative growing. There is the problem of selection of the pullets at delivery, determining what the buyer is entitled to, making adjustments and financing. Too many poultrymen are increasing the number of birds without increasing housing space, feeder or watering space. There is also the problem of 'looks'. Pullets raised on a restricted feeding program do better, but they don't look as good, so most buyers are not satisfied with them."

Some of the economics of the started pullet program were discussed by Harold Glover, Alton, N.H., a market egg producer with a one-man farm. He said he has a laying house capacity for 3,000 birds, and if he buys started pullets, he could keep 1,500 more in his brooder house. His cash cost of raising a Leghorn-type pullet is $1.60 to $1.70. To buy these would cost $2.35. This means $2,925 increased cost if he buys pullets and increases to 4,500 layers, or $2 per layer for the extra 1,500 layers, he said.

By contract raising these pullets, he said, he can grow them for $1.90 to $2 each. This figures out to 90¢ extra cost per layer, which Mr. Glover said is a sounder program, and is one he is following. He indicated, however, that larger operators who use hired labor to raise pullets might find buying the birds more advantageous.

Agreements

Ray Parmenter, Parmenter Reds, Inc., Franklin, Mass., said his firm features custom growing by mutual agreement. About 90% of the pullets grown by the firm are raised on a contract with a buyer. Involved is an agreement in writing both buyer and seller understand and there is a health statement with the pullets, outlining when and for what they were vaccinated. This is confirmed by the state laboratory blood test. There is also an agreement with the contract farm growing the chicks and with the feed company to maintain inspection and service of the flock.

He said there are problems, however, and listed as one of them the various vaccination programs requested by buyers.

Another hatchery program, that of Hubbard Farms, Inc., Walpole, N.H., was described by William Phipps of Hubbard Farms. He said about 80% of the birds grown are ordered ahead, and a deposit is made on them. The firm has 19 farms, all on an all-in, all-out program, and are on contracts similar to a broiler-growing contract. One man spends full time supervising the growers.

All flocks are vaccinated for Newcastle and bronchitis. If pox vaccination is requested, this is done at the time of delivery.

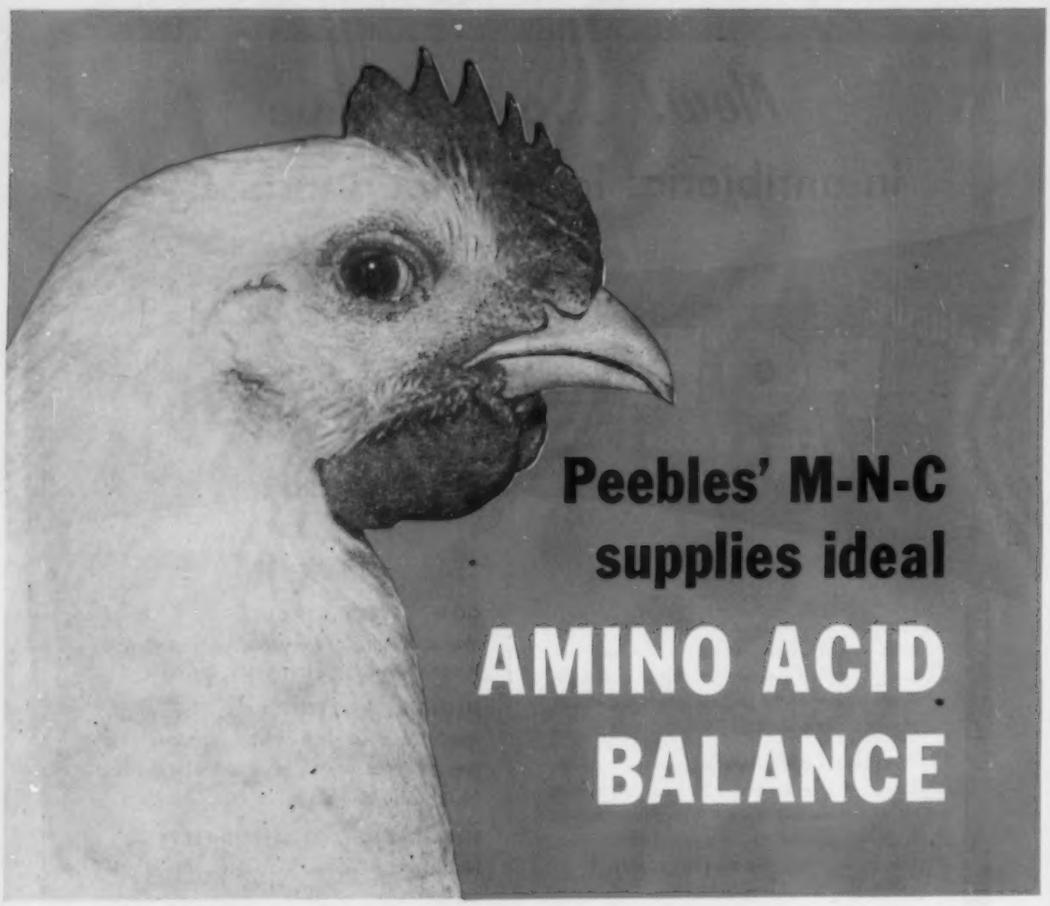
Feeding high-level antibiotics for five days after delivery is recommended to offset the stress of moving, he said. The firm also recommends extra water space after moving, as well as the right-sized feeders. Debeaking is done when the buyer requests it.

Several questions concerning health protection, restricted feeding, deliveries and the effects of the program on the poultry industry were asked. But there was not 100% agreement on the answers. Speakers agreed that there are things to be answered, but that this program is finding its place in the poultry business.

CONTRACT MARKET EGG PRODUCTION—Dr. Ralph Baker, poultry marketing specialist at Pennsylvania State University, discussed contract market egg production programs now in operation. These he classified into three types of operations:

Contract Marketing: Under this program, the producer owns his own building and birds. He signs a marketing contract or agreement to sell to a buyer for a specified period of time at a specific price in relation to a central market quotation. Provi-

(Turn to page 78)



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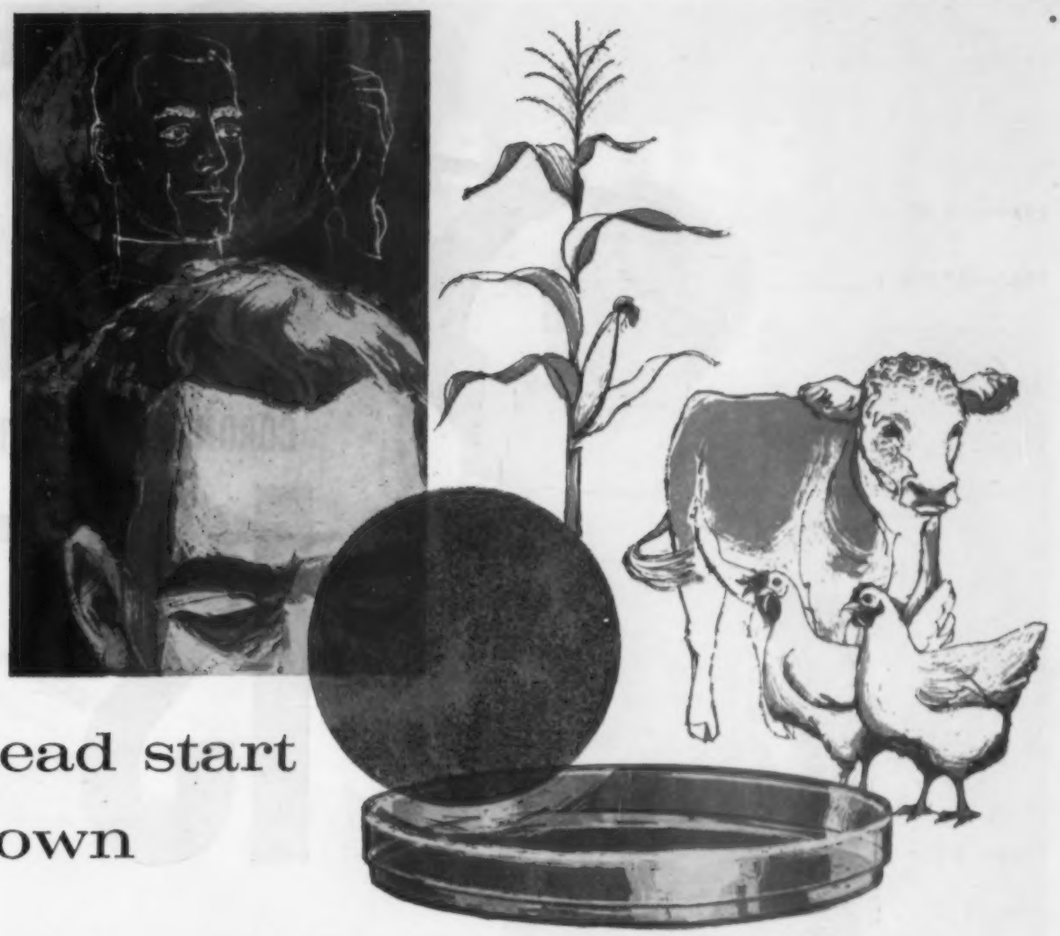

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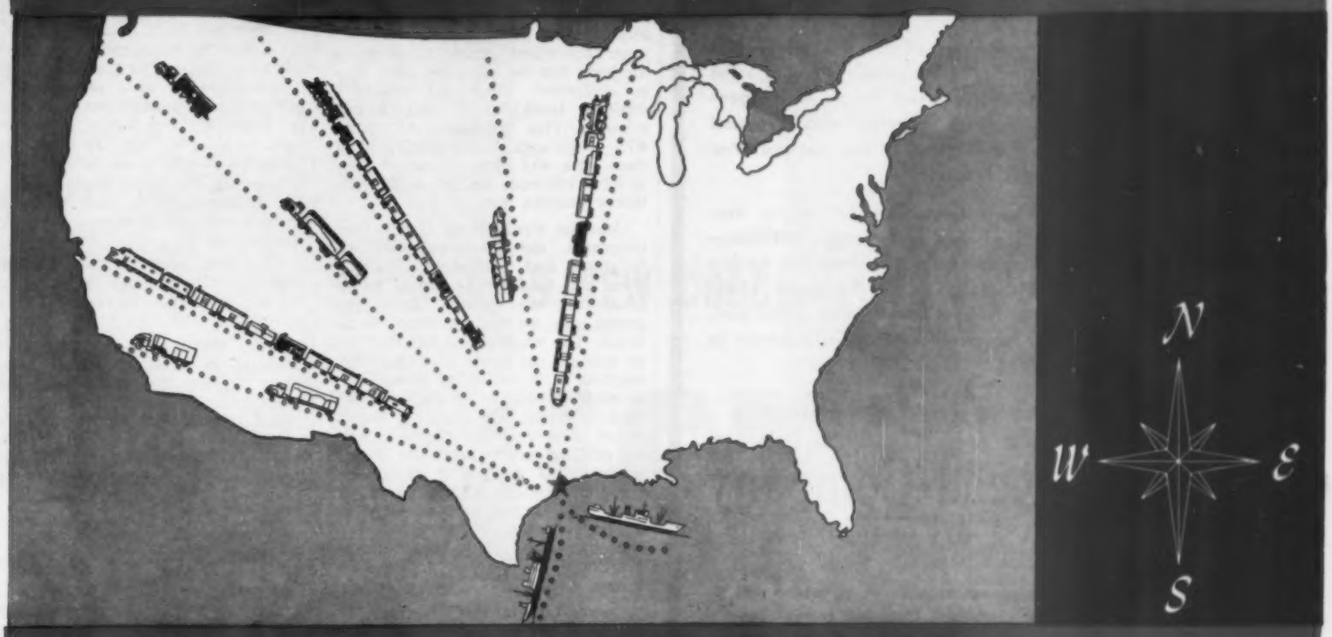

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sions of these programs frequently specify a standardized feeding program, the strain of birds to be kept, when the chicks are to be started, frequency of gathering, cleaning and refrigeration. Most of the organizations in these programs sell feed. As an example of this type of program, Dr. Baker mentioned the Safeway program in Minnesota and Iowa.

Dr. Baker also pointed out that most of the farms producing these eggs have poultry as only part of the farm business.

Another example he cited of a contract marketing organization is the Poultry Producers of Central California cooperative, which handles $25 million worth of eggs. Because of the large operation, many labor-saving methods can be used, he said, such as equipment which will unload a 400-case truckload of eggs in four minutes. This organization handles 40% of the eggs sold in the San Francisco area, and such volume allows it to have influence on the market, Dr. Baker pointed out.

Contract Production: Under these programs, the producer owns the buildings and equipment, and the birds and feed are furnished by the sponsoring organization. These programs are very prevalent in the South. The organization has the right to remove the birds from the farm anytime it wishes. The grower gets so much a bird, or so much a dozen eggs produced. The program has resulted in a high quality product and an efficient production. The cost of houses and equipment in some of these areas is only $1.30 per bird. One such organization in Mississippi has as its objective 1 million birds in these programs. Many businessmen in the South are investing in these programs, he said.

Owner-Integrated Operations: Under these programs, the organization owns the birds and facilities. The programs have uniformity of stock, feed and management. With a number of these programs, the eggs are in the stores the day after they are produced. In North Carolina, one farm has 350,000 birds in 10 units. These programs give better control over production and marketing factors, Dr. Baker said. There are operations involving over 100,000 layers each in many states. In California, one farm has 200,000 layers at one location, he said.

According to Dr. Baker, it would require only 1,000 farms of 250,000 layers each to supply all the eggs needed for U.S. consumers at the present level of consumption. In Pennsylvania, he said, one organization plans to have 1 million layers in one location.

He said he found that every state and area plans to supply all the eggs consumed in the area, plus a few to sell outside. The southeastern states, for example, were formerly a deficit area, he said, but are now about self-sufficient in egg production.

"One of the South's advantages," Dr. Baker said, "is that it doesn't know what can't be done, and is planning to do it.

"The egg picture is changing rapidly. Quantity and quality control are coming fast, and the roughest times are ahead," he said.

NEW ENGLAND EGG PRODUCERS ASSN.—The recently organized New England Egg Producers Assn. was discussed by Charles Shelnut, Northampton, Mass. This organization was formed by the committees from the state associations of New England to work on marketing New England eggs. It has as its purposes:

1. To provide the medium for a united New England-wide attack on marketing and other problems of egg producers.
2. To develop and promote a sound and effective quality and merchandising program for New England eggs and, if possible, develop a New England seal of identification.
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Here's a typical letter from a grower (name on request) who raises a million broilers a year. He says, "**Our feed efficiency has improved more than 10 points** *over the same period of last year while coccidiosis has not been a problem with us. We feel that the pigmentation, finish and quality of our birds has been greatly improved with UNISTAT feed. UNISTAT is now in our ration 100%, but we field-tested a number of coccidiostats before we made this change.*"

This grower, like thousands of others, has discovered that UNISTAT scores highest where it counts most: *On the profit side of his record book.* That's the test that really counts. And that's why you'll want Dr. Salsbury's UNISTAT in all your feeds for chicks, broilers and growing chickens. It can build bigger profits for you and your customers.

Please write for Feed Manufacturers Guide and further information on UNISTAT

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NATIONWIDE SERVICE TO THE FEED INDUSTRY

HOW'S BUSINESS?—Almost all the 800 persons registered for the annual convention of the Nebraska Grain & Feed Dealers Assn. held recently at Omaha turned out for informal chatting during the social hour which closed the event. Shown (left to right) in these pictures are the following: E. G. Keefe, Douglas Chemical Co., Lincoln, and R. B. Dunlap, B. N. Dunlap Co., Bridgeport; Ivan Lux and Merle F. Huston, Holdrege (Neb.) Seed & Farm Supply Co.; Dale McGee, Honeggers' & Co., Lincoln, and Erwin Wascher, Honeggers' & Co., Fairbury, Ill.

agreements and contracts between independent egg producers and egg handlers (private and cooperatives) and to encourage the adoption of same.

4. To encourage the merger of New England cooperatives into a strong producer-controlled, marketing outlet.

5. To promote the adoption of uniform egg laws in New England.

6. To represent the egg producers in New England in legislative matters of concern to the industry, both state and national.

7. To cooperate with the Poultry & Egg National Board, the Northeast Poultry Producers Council and other organizations in regional and national programs of concern to egg producers.

The association currently is working on promotion plans and a New England quality-controlled marketing program. It suggests a 1¢ cwt. increase in feed costs to raise funds for this program and for PENB.

VACCINATION PROGRAMS, COCCIDIOSIS CONTROL AND SUPPLEMENTAL NUTRITION—Dr. J. L. Roundtree, veterinarian with Samuel Lipman Sons, Augusta, Maine, discussed programs used by the firm for its hatching egg flocks. Breeding flocks are vaccinated with a Newcastle spray vaccine at 10 days, the field strain of bronchitis at 5 to 9 weeks and wing web Newcastle at 16 weeks. The immunity is checked with the blood test, and if it is low the birds are revaccinated with the spray vaccine after four months of production.

Dr. Roundtree said the company is interested in a strong immunity that will give the chicks a strong parental immunity.

Bifuran is used for coccidiosis control. Dr. Roundtree said there have been some breaks when breeders were grown on one farm for 12 weeks and then moved to a breeding farm. Apparently there was not enough exposure to establish immunity on the growing farm, he said. The firm is now conducting trials on the use of CocciVac, and this looks encouraging, he said.

Breeders are fed a highly fortified pellet that contains extra vitamins. The pellets are started after four months of lay and are increased to 5 lb. per 100 birds.

Dr. Roundtree said the firm also uses considerable increased vitamin A. It has had a vitamin A deficiency occur apparently because of the separation of feeds when bulk handling was used. Many of the breeder flocks are found to have capillaria worms. This also calls for increased vitamin A, he said.

Fecal samples from laying flocks are used to determine the worm and coccidiosis levels. Several laying flocks have been found to have low-level outbreaks of coccidiosis. These were treated with nf-180.

STIMULIGHTING — Prof. W. C. Skoglund, head of the poultry department at the University of New Hampshire, presented a progress report on duplicate pen tests at UNH in which conventional lighting is being compared with "stimulighting" and a modified stimulight program.

At 48 weeks of age, the natural light pens had averaged 14 eggs more than the stimulight birds and 12 eggs more than the birds on the modified program, he reported. This is with production-bred heavy birds, he said. Work under way at Cornell University with Leghorns parallels this work.

A test by a commercial company with meat-type White Rocks is showing the same results. Prof. Skoglund questioned whether the stimulight birds in these tests will be able to catch up with the conventional program birds and produce enough more eggs to pay for the added cost of the program.

Two solutions were passed at the meeting. One supported House Bill 236 which, if passed, will eliminate the property tax on poultry and other livestock. The resolution was wired to the committee hearing which was taking place in Concord at the time of the meeting.

The other resolution supported the New England Egg Producers Assn. in the proposed promotion program for New England eggs.

Exhibits of experiments with genetics, feeder space, disease control, fan ventilation and sealed egg buckets and cases attracted much interest. These were sponsored by the UNH poultry and agricultural engineering departments.

ADDS BULK BINS

THORNTON, IOWA—The Thornton Farmers Cooperative Elevator at its annual meeting reported an addition to its bulk feed bins which will increase the capacity to 132 tons.

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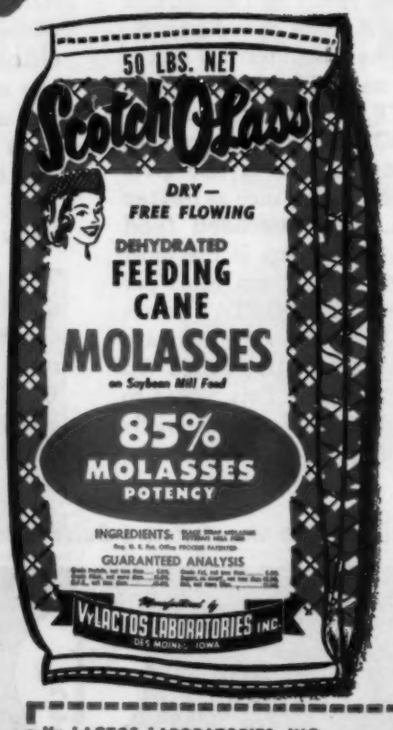

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- Up to 3% better dress-out
- 16% protein finisher as good as 20%

Reprinted from FEEDSTUFFS *of September 6, 1958*

ESTROGENIC COMPOUNDS FOR CHICKENS

By William K. Warden, Robert K. Ringer, Lester F. Wolterink and Philip J. Schaible
Michigan Agricultural Experiment Station
East Lansing, Mich.

Early tests show that estrogenic compounds increase fat content of muscle tissue.

"In-the-feed" LIPAMONE eliminates cost of handling . . . as well as accompanying stresses and setbacks.

Considerable interest has developed in recent years in the application of hormones for quieting birds and improving the quality of poultry meat. As early as 1939, it was found that estrogen increased the fat content of muscle tissue. With the advent of relatively inexpensive and readily available diethylstilbestrol, more interest in hormone treatment of broilers developed. Lorenz (1943) observed the fattening effect of subcutaneous diethylstilbestrol (DES) implants in three-week-old cockerels. In most cases, workers have obtained no added weight gains from estrogenic treatment nor has feed efficiency been significantly affected.

More recently, it has been shown that dienestrol diacetate (Lipamone), an estrogenic compound, promotes a fattening effect similar to DES. Initially, the oral dose recommended for Lipamone was 1 lb. per ton or 31.75 mg. per pound of feed during the final fattening period. The advantages of feeding the estrogen are that it eliminates the cost of handling the birds necessary with pellet implantation, and the stresses encountered following handling.

Current tests on LIPAMONE are being conducted by (from left) Schaible, Ringer, Warden and Wolterink of Michigan Agricultural Experiment Station.

Dr. Robert K. Ringer, poultry specialist at Michigan State University, weighs birds prior to starting new LIPAMONE experiments.

TABLE 1. Rations, treatments and results at specified intervals.

	Control	Implanted two 15 mg. DES pellets	—Pounds Lipamone per ton— 1	½	⅓
% Protein—Calories/lb. (Starter)	24-1025	24-1025	24-1025	24-1025	24-1025
% Protein—Calories/lb. (Finisher)	16-1025	16-1025	16-1025	16-1025	20-1025
% Protein—Calories/lb. (Fattener)	13-1062	13-1062	13-1062	13-1062	16-1025
Number of birds:					
Started at 5 weeks	64	64	64	64	64
Alive at 9 weeks	64	62	62	64	62
Alive at 13½ weeks	64	62	62	64	62
Weight of birds in lb., averages:					
At 5 weeks (both sexes)	1.51	1.51	1.51	1.51	1.51
At 9 weeks (both sexes)	3.06	3.20	3.07	3.19	3.26
At 13½ weeks (both sexes)	5.00	5.18	5.20	5.07	5.20
At 13½ weeks (males only)	5.67	5.84	5.77	5.66	5.85
At 13½ weeks (females only)	4.29	4.46	4.56	4.48	4.58
Feed consumed in pounds:					
Starter 0-5 weeks	123	123	123	123	123
Finisher 6-9 weeks	316	355	329	343	326
Fattener 10-13½ weeks	555	566	577	544	532
From 0-9 weeks	439	478	452	466	449
From 0-13½ weeks	994	1044	1029	1010	981
Feed efficiency:					
From 0-5 weeks	1.92	1.92	1.92	1.92	1.92
From 0-9 weeks	2.06	2.24	2.12	2.11	1.98
From 0-13½ weeks	2.98	3.24	3.00	2.97	2.86

TABLE 2. Abdominal fat deposition in birds treated as specified.

No.	Treatment	—Per cent protein—Cal./lb.— Starter	Finisher	Fattener	—Average abdominal fat— —Males— Grams	% of live wt.	—Females— Grams	% of live wt
1	Control	24-1025	16-1025	13-1062	89.0	3.39	75.1	3.65
2	DES pellets	24-1025	16-1025	13-1062	114.9*	4.37	115.0*	5.42
3	1 lb./ton Lipamone	24-1025	16-1025	13-1062	97.5	3.74	69.1	3.35
4	½ lb./ton Lipamone	24-1025	16-1025	13-1062	93.5	3.52	60.6	2.91
5	⅓ lb./ton Lipamone	24-1025	20-1025	16-1025	27.3**	1.03	46.9***	2.20

*Significantly more fat than all other treatments of males.
**Significantly less fat than all other treatments of males.
***Significantly less fat than DES treatment of females.

During 1957-58, an experiment was conducted to establish whether the desirable effects of hormonizing can be obtained with less Lipamone in the feed and whether feeding is as effective as implanting DES. Accordingly, levels of 1 lb., as well as ½ lb., of Lipamone per ton of feed were used in the feeding experiment; also broilers fed untreated feed were implanted with two 15 mg. DES pellets; one at the fifth and one at the ninth week of age. In addition, higher-protein finisher and fattener rations were used at the ⅓ lb. per ton Lipamone level.

Four replicated lots of 16 five-week-old, broiler chicks (8 males, 8 females—totaling 64 per treatment) were randomly allotted to floor pens with shavings as litter. The birds had been previously reared in electrically heated batteries with raised wire floors and fed an all-mash, high quality, starter ration containing 24% protein and 1,025 calories of productive energy per pound.

Results of growth, livability and feed utilization for 9-week-old broilers and for birds at roaster market age (13½ weeks) are shown in Table 1.

Since relative fat deposition in market-weight roasters might be an important consideration affecting price, a measurement of abdominal fat including that around the gizzard was made on the dressed carcasses. These results are shown in Table 2. Significant differences between treatments were determined by Duncan's (1955) multiple range test.

Save protein costs — when LIPAMONE is used in broiler feeds at ⅓ lb. per ton, a 16% protein finisher containing 1025 calories per lb. gave 9-week weights nearly equal to 20% finisher containing 1025 calories. (Contact us for full information.)

Better dress-out — abdominal fat in roasters averaged 50-75% less for birds fed LIPAMONE than birds with pellet implants.

Birds produced on 1/3 lb. of LIPAMONE per ton were equivalent to those produced by two pellet implants or by 1 lb. of LIPAMONE per ton.

Why pay meat prices for "waste" abdominal fat?

More ideal carcass—a more marketable carcass results when LIPAMONE at 1/3 lb. per ton is fed with a 20% protein finisher and a 16% fattener.

Although in most instances there was an increase in weights at broiler and roaster ages where Lipamone and DES were given, it would have required many more birds to make the differences statistically significant. Thus the data show that Lipamone, DES or a higher level of protein in the finisher and fattener rations do not significantly affect rate of growth or feed efficiency. The ⅛ lb. of Lipamone was equally as good as the 1 lb. and all hormone treatments were equivalent.

DES implants significantly increased the amount of abdominal fat. Lipamone did not affect the amount of abdominal fat except at the ⅛ lb. per ton level on higher-protein finisher and fattener. In this case the amount of fat was significantly reduced in the males, not as markedly in the females. The effect may be simply due to the decreased C/P ratio rather than to Lipamone. No carcass grades were obtained. However, dressed weights of roasters on the higher and lower protein rations were similar. This suggests that a 20% protein finisher and a 16% fattener would produce a more ideal carcass for the market than the lower levels of protein used in this experiment.

A A

LITERATURE CITED

Duncan, D. B., 1955—Multiple range and multiple F tests; Biometrics, 11:1-42.

Lorens, F. W., 1943—Fattening cockerels by stilbestrol administration; Poultry Sci., 22:190-191.

At Michigan State University, recent findings substantiate earlier evidence that LIPAMONE is effective at reduced levels (from originally recommended 1 lb. per ton to ½ lb. per ton).

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Reduce throwouts!

New federal inspection rules for poultry are now in effect. Adding LIPAMONE to the feed is a practical approach to desired quality in roasters and broilers. Here is extra finish and bloom that finds a ready market. No stresses or shock due to handling. No "misses," since all birds are treated in the feed. LIPAMONE calms birds . . . picking is no problem.

67% less waste fat

Recommended feeding schedule

Type of Bird	Lbs. LIPAMONE per ton	% Dienestrol diacetate in feed	Feeding period
Broilers	⅓	0.0023	Last 4-6 weeks
Roasters	⅓	0.0023	Last 6-10 weeks
Squab Broilers	1	0.007	Last 3 weeks
Turkey Fryers	1	0.007	Last 3 weeks

For best results, a 60-65 to 1 calorie-protein ratio is advisable.

LIPAMONE for broilers now only 1¢ per bird

LIPAMONE for roasters now only 3¢ per bird

(New lower protein levels now suggested)

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Dr. Guy A. Railsback

NEW PRESIDENT — Dr. Guy A. Railsback, manager of veterinary products for Cutter Laboratories, Berkeley, Cal., was elected president of the Animal Health Institute for a one-year term at the organization's annual meeting held recently in Washington, D.C.

FTC Drops Charges Against Bag Firms

WASHINGTON — The Federal Trade Commission has dismissed its charges that Fulton Bag and Cotton Mills, Atlanta, Ga., and Equitable Paper Bag Co., Long Island City, N.Y., participated in an illegal conspiracy to fix the prices of multi-wall paper shipping sacks.

Adopting the initial decision of John Lewis, hearing examiner, granting unopposed motions to dismiss, the commission agreed that further proceedings against these two concerns would not be in the public interest.

FTC's complaint, issued Dec. 7, 1955, alleged that 21 leading paper bag manufacturers, including Fulton and Equitable, used the same pricing formula in order to quote identical delivered prices to customers, regardless of their location or freight costs.

The latest action disposes of the proceeding as to all respondents. On Feb. 12, the FTC approved a consent order requiring 17 of the manufacturers to discontinue these activities; and in 1956 Mr. Lewis dismissed the charges as to two others who no longer make and sell the sacks.

Fulton's principal ground for dismissal was that it has disposed of its multi-wall paper operations. FTC trial counsel did not oppose the motion but themselves moved to dismiss as to Equitable. They stated that expenditure of time and money which would be necessary to proceed against this sole respondent is not in the public interest because the order agreed to by the others will effectively deal with the challenged practices.

Dixie Home Opens Alabama Feed Mill

ALBERTVILLE, ALA. — Dixie Home Feeds, Inc., Albertville, has begun operations at its new mill here. The plant will supply the Albertville, Athens and Cullman, Ala., Dixie Home feeding operations with both broiler and layer type feeds.

The new pushbutton mill, which has a capacity of 200 tons a day, is fully automatic. It was designed and equipped by Sprout, Waldron & Co., Muncy, Pa., and it has a Richardson Scale Co. automatic panel.

The mill is designed for bulk receiving and shipment.

Henry Tilford, Jr., Shelbyville, Tenn., is president of Dixie Feeds, Inc. E. B. Medlock is manager of the Albertville Dixie Home Store and feed-out operation, which in the Albertville area is mostly a broiler operation. Mays Montgomery, Athens, is manager of the Athens Dixie Home Store and the Cullman feed-out operations. The firm has both broiler and layer operations in this area.

Dixie Home is reported to have one of the largest broiler feed-out programs in north Alabama.

Utah Alfalfa Condition

LOGAN, UTAH — Alfalfa, Utah's number one crop in acreage, tonnage and dollar value, is in "fairly good condition" but may be threatened by lack of irrigation water in central and southern Utah.

Weevils and aphids, alfalfa's traditional enemies, pose a threat only in Kane County, according to state agencies' reports. Timely spraying is being counted on in other sections to control the pests. Damage from freezing temperatures during the last two weeks is believed relatively light because alfalfa growth had barely started.

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LIKE TOPSY . . . THEY JUST GROW

*We certainly won't attempt to explain the alarming growth rate that Topsy seemed to achieve . . . it's enough to say, "She just grew". To feed users, however, it isn't this simple. "Growth" is without question the most important element in livestock feeding. It is a constant source of study by manufacturers, colleges, experimental stations to arrive at the perfect feed balance to assure greater growth at a lower cost per pound.

These studies have revealed stimulating Unidentified Growth Factors that are found only in a meat and bone meal diet. They also show that 50% meat and bone meal provides: 32 times the calcium, 6 times the phosphorous, 2 times the riboflavin and niacin, 10 times the fat, and 1.14 times the protein found in substitute vegetable products.

Because of this greater knowledge, more and more feed manufacturers and millers are turning to meat and bone meal as their choice for protein in the practical balanced diet. It is easy to use, it is economical, it assures the right balance of proteins, and highest productivity. The feeder knows that this adds up to better conversion, lower cost per pound of weight gain and INCREASED GROWTH RATE.

Because the demand for feed with meat and bone meal is ever-increasing the wise feed manufacturer is switching to this source for protein. He gets better prices and more sales because they do more for the feeder . . . giving him greater profits through better results.

Whether you are large or small, you can use meat and bone meal easily. The mixing is simple and economical, since the meat meal is received pre-ground and ready to add, with other ingredients, to the feed.

Write for our free booklets that fully describe the benefits found in meat and bone meal. This valuable information will help you increase your sales and supply you with information to pass along to your customers.

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THE EARLY WEANING OF LAMBS

"It appears that weaning of lambs at about 12 weeks of age will make it possible to raise sheep under a more intensive system. This practice could put sheep on a more equal economic footing with other farm enterprises, particularly on high-cost tillable land."

By R. M. Jordan H. E. Hanke and D. Reimer*
University of Minnesota

A radical change in sheep production—that of weaning lambs at 10-12 weeks of age and drylot feeding of lambs and in some cases the ewes—is taking place in the "farm states."

The system will result in:

1. A far greater number of lambs creep-fed.

2. A significant increase in the amount of commercial feed used (highly palatable, pelleted starter rations fortified with antibiotics, mineral, vitamins and high quality protein).

3. A higher percent of 90-lb. fat lambs sold in June.

4. Tremendous reduction in internal parasite problems.

5. An increase in the number and size of sheep flocks in areas of high production since land required for pasture is reduced.

6. An increase in efficiency of producing lambs.

Research at many experiment stations on specific phases of lamb production lends light as to why this system works.

Milk production by ewes reaches its peak about three weeks postpartum and declines steadily thereafter (Barnicoat et al, 1948, 1956). Wallace (1947) noted that approximately 38% of the total milk yield for the 16-week period is produced in the first month and about 30, 21 and 11% in the second, third and fourth months, respectively. Owen (1957) reported 45-50% of the first 10 weeks' yield is produced in the first month. Whiting et al (1952) reported a high correlation between milk yield and lamb growth from birth to seven weeks of age. Milk yield was the most important factor influencing growth of young lambs in a study reported by Owen (1957). The same author reported that by the end of 10 weeks the correlation of lamb growth and milk yield was small and non-significant.

Barnicoat et al (1948) found that an average of 5.5 units of milk was ingested for each unit gain in live weight. Owen (1957) reported 4.5-5 units of milk were required for each unit of live weight gain. Both authors reported that as the lambs became older, the number of units of milk required per unit of live weight gain decreased, indicating less dependency by the lamb on milk as its sole source of nutrients.

Efficiency of milk produced per unit of feed consumed decreases with advance in lactation stage. Wallace (1947) reported that it required about 8 times more gross digestible energy and pure protein equivalent to produce a pound of milk during the period from 112 to 140 days than during the first four weeks. During the period from 84 to 112 days the increase was about four-fold.

Early weaning (9-12 weeks of age) was reported by Barnicoat et al (1956) as not adversely affecting lamb gains. The Commonwealth Scientific and Industrial Research Organization of Australia advocates weaning lambs at a minimum of 17 lb. as a means of maintaining breeding stock during drouth periods.

The main objects of the experiment reported herein were: (1) Determine the effect of early weaning on subsequent gains and feed consumption as compared to the conventional method of raising lambs. (2) Determine the optimum age to wean lambs. (3) Study methods of feeding and management of early weaned lambs.

EDITOR'S NOTE: Some research of real potential significance to the feed industry as well as farmers, particularly in the midwestern states, is reported and discussed in the accompanying article. The sheep production program described here means early weaning of lambs and drylot feeding of the lambs and in some cases the ewes. Lambs are weaned early and never put on pasture at all. They stay in drylot and get dry feed from weaning time on. The conventional system is to leave lambs with the ewes and put them both on the same pasture until the lambs are ready for market. The new system, a more intensive plan would indicate a shift from "pastoral" methods to a "push" program. Some observers feel that the feed industry, within a few years, will be selling much more feed to sheepmen in the "farm states"; this may include both ewe flocks and the lambs.

EXPERIMENTAL PROCEDURE: Lambs raised at three Minnesota experiment stations during 1956, 1957 and 1958 were used as test animals to determine the effects of weaning grain-fed lambs at 8-13 weeks of age on their subsequent growth rate, feed consumption and feed efficiency. Comparable lambs within each trial were creep-fed on pasture with their dams. The creep ration within each trial was the same for all lambs and consisted of a simple mixture of ground corn, oats, bran and soybean oil meal. Before weaning, all of the lambs had been accustomed to eating grain. The ewes were grain-fed before being turned onto pasture but not after being placed on pasture. Exceptions to this general plan of procedure as they applied to the specific stations were as follows:

Crookston — Inbred Shropshire lambs born in 1956 and 1957 were assigned on the basis of their age to four treatments by weaning alternate lambs at 8, 12, 16 and 20 weeks of age. It was necessary to pasture all four weaning age groups together Therefore no creep feed consumption or feed efficiency data by weaning group are available.

Morris—In 1956 the lambs were weaned at an average age of 10 weeks and fed in drylot. Pasture was not available until two weeks later. During that two-week period the grain fed the ewes suckling the lambs that were not weaned was charged against their respective lambs. In 1957 and 1958 the average age at weaning was 13 weeks. A comparison was made between early weaned drylot-fed lambs and creep-fed lambs on pasture both years. In addition, in 1958 a third group of lambs was weaned at 13 weeks of age and grain-fed on brome pasture.

St. Paul — In 1957 12-week-old lambs were allotted to two treatments. Treatment 1: lambs were weaned and full-fed in drylot; treatment 2: lambs were creep-fed on brome pasture with their dams.

In 1958, 10-12-week-old lambs were purchased for the experiment. The heaviest lambs were divided into three lots and placed on the following types of pastures June 2: (1) oats and rape; (2) oats and peas followed by sudan; and (3) solid seeded peas followed by solid seeded corn pasture. No grain or hay was fed in any of these lots. Fresh water and phenothiazine-salt mixture were provided but no shade was available.

The balance of the lambs (light end and presumably the youngest) were full-fed shelled corn, alfalfa hay and soybean oil meal in drylot.

Pasture charges at all stations were arrived at by arbitrarily assigning a rental value per acre for improved pasture of $18. Carrying capacity of 12 lambs per acre for 100 days was determined. Therefore the charges assigned per lamb daily were 1½¢. Analysis of variance (Snedecor, 1946) was the method used for the statistical analysis of the data.

RESULTS: In addition to gathering data relative to the optimum age at which to wean lambs, it is desirable to determine the effect of various management and feeding levels that may be followed in combination with early weaned lambs. Therefore the following feeding and management schemes in conjunction with early weaning were employed and the results of the experiment will be discussed accordingly:

1. Lambs weaned at either 8, 12, 16 or 20 weeks and creep-fed on pasture.

2. Lambs weaned at 10 or 13 weeks and fed in drylot vs. creep-feeding non-weaned lambs on pasture.

3. Lambs weaned at 13 weeks and fed either in drylot or on pasture vs. creep-feeding non-weaned lambs on pasture.

4. Early weaned drylot fed lambs vs. early weaned lambs fed on pasture with no supplemental grain feeding.

The results of weaning lambs at 8, 12, 16 or 20 weeks of age at the Crookston Station during 1956 and 1957 are presented in Table 1.

Average daily gain from weaning to 20 weeks of age was greater in 1956 for lambs weaned at 12 or 16 weeks and creep-fed on alfalfa-brome pasture than for lambs weaned at either 8 weeks or 20 weeks. In 1957 lambs weaned at 8 weeks of age gained significantly slower than

Dr. R. M. Jordan

AUTHOR—Dr. R. M. Jordan has been closely associated with the sheep business all his life. He was in charge of the sheep nutrition investigations at South Dakota State College for seven years and since 1954 has directed the sheep nutrition work at the University of Minnesota, St. Paul. He has conducted extensive research dealing with the effects of hormones and antibiotics on both feeder and suckling lambs. Dr. Jordan received his M.S. degree at South Dakota State College and his Ph.D degree in animal nutrition at Kansas State University.

William Meixell, a Minnesota lamb feeder, is now running a profitable flock of 500 ewes. The unique thing about his operation is that he raises sheep at all. Every acre of his land is tillable and valued at $400-500 an acre. Mr. Meixell is going to the "push" program of early-weaning lambs and drylot feeding the lambs. He's still planning to ease the ewes to pasture after the lambs are weaned, but he may eventually pull this part of his operation into drylot, too. As pictured here an all-metal addition to his barn is used in handling 500 ewes and the lamb crop.

Early-weaned lambs at the farm of William Meixell in Minnesota. The system described in the accompanying article is expected to result in a significant increase in the amount of commercial feed used for lambs (highly palatable, fortified starter rations).

*Paper No. 1013, Miscellaneous Journal Series, University of Minnesota, Agricultural Experiment Station, St. Paul, Minn.

TABLE 1. Effect of Early Weaning of Lambs Fed on Pasture

	——Crookston, 1956——				——Crookston, 1957——			
Weaning age (weeks)	8	12	16	20	8	12	16	20
Number of lambs at 20 weeks	38	24	26	32	29	38	41	38
Average weight at 20 weeks (lb.)	69.2	77.7	76.7	68.9	54.7	62.3	61.3	67.8
Average daily gain from birth to 20 weeks (lb.)	0.43	0.49	0.48	0.42	0.33	0.38	0.38	0.42

lambs not weaned until 20 weeks of age. Weaning at either 12 or 16 weeks of age resulted in slightly slower daily gains than weaning at 20 weeks. Averaging the growth data for the two years results in average daily gains of .38, .43, .43 and .42 lb. per lamb daily for 8, 12, 16 and 20 week weaning ages, respectively. Eight week weaning ages appear less favorable than either 12 or 16-week ages. These results are in very close agreement with early weaning results reported by Barnicoat et al (1956) and Perry et al (1958).

Table 2 presents the results of feeding in drylot early weaned lambs vs. creep feeding lambs on pasture at both the Morris and St. Paul stations. In 1956 lambs weaned at 10 weeks of age and fed in drylot gained .41 lb. per lamb daily as compared to 0.43 lb. per lamb daily for similar lambs creep fed on blue-grass pasture and not weaned. During the first two weeks following weaning, creep feed consumption was low and virtually no gain was made by the weaned group during that period. Apparently creep feed consumption at that age is not sufficient to offset the nutrients normally supplied by the ewe's milk. However, during the last 56 days of the trial the early weaned lambs gained slightly faster than the non-weaned lambs.

Lambs weaned at 13 weeks of age (Morris, 1957) and at 12 weeks (St. Paul, 1957) and fed in drylot made slightly faster gains than comparable non-weaned lambs (Table 2).

Lambs weaned at 12-13 weeks are apparently better able to stand the "shock" of weaning as their gain following weaning and their feed consumption did not decline as was the case when lambs were weaned at 10 weeks of age. Lambs weaned at 12-13 weeks ate slightly more grain per lamb daily than non-weaned lambs.

The results of weaning lambs at 13 weeks and grain feeding them in either drylot or on brome grass pasture as compared to creep feeding non-weaned lambs on pasture are presented in Table 3 (page 88).

It made little difference in rate of gain or average daily grain consumption whether early weaned lambs were grain-fed on brome pasture or in drylot. (Table 3.) However both early weaned groups gained significantly faster ($P<0.05$) than non-weaned lambs that were creep-fed on pasture.

It should be mentioned that all of these trials conducted at Morris and St. Paul terminated by mid-July. Therefore, the effects of unpalatable, unproductive pastures that usually occur after that date did not exert their normal adverse consequences on the lambs. The excellent pasture available in these trials likely accounts for the slightly lower grain consumption by the lambs on pastures.

The results obtained when early weaned lambs, pastured without grain feeding, were compared with grain feeding early weaned lambs in drylot are given in Table 4 (page 88).

Lambs grain-fed in drylot gained 0.51 lb. per lamb daily compared to about 0.45 lb. per lamb daily for the lambs fed on pasture without supplemental grain. Feed required per 100 lb. gain was comparatively low for the early-weaned grain-fed lambs.

CONCLUSIONS: The data suggest the following conclusions and raise some questions as well:

1. Lambs may be weaned at 10-14 weeks of age as compared to the usual 20-24 weeks without reducing subsequent gains.

2. Weaning lambs at 8-10 weeks appears to be slightly less satisfactory than 12 weeks. However, if parasites and/or low quality pasture are the normal course of events, weaning at 8-10 weeks and grain feeding in drylot or on high quality pasture will result in greater lamb productivity.

3. No apparent advantage exists for either grain feeding early weaned lambs in drylot or on good quality pasture.

4. Grain consumption fed in drylot, as compared to grain consumption when lambs are fed on pasture, whether weaned or not, depends largely on the quality of the pasture. If the pasture is of low quality (as may be the case in late summer) grain consumption on pasture is as great, or greater than when lambs are fed in drylot.

5. Feeding early weaned lambs without grain on pasture results in slower gains than grain feeding early weaned lambs in drylot.

6. Comparative costs of early weaned lambs fed in drylot and non-weaned creep-fed lambs on pasture depend entirely on the charge made against the pasture. If a realistic pasture charge of $18-$24 per acre is made, feeding in dry lot is no more costly.

The questions that this study raises are:

1. How may the non-lactating ewe be fed and managed on an all-tillable farm to reduce her feed costs?

2. What may be added to the lambs' rations to increase feed con-

TABLE 2. Effect of Early Weaning on Lamb Production

	Morris, 1956		Morris, 1957		St. Paul, 1957	
Number of lambs	16	15	44	44	17	17
Weaning age* (weeks)	10	Not Weaned	13	Not Weaned	12	Not Weaned
Average increase weight, lb.	49.8	48.5	62.1	61.8	62.1	61.2
Average daily gain, lb.	.41	.43	.50	.48	.36	.32
Days on experiment	70	70	56	56	60	60
Average daily feed cons., lb.:						
Grain	1.41	1.32**	1.64	1.57	2.0	1.4
Hay	.80	.31	1.73	...	...	...
Feed per 100 lb. gain, lb.:						
Grain	348	304	326	329	553	433
Hay	197	71	341	...	...	...

*All lambs weaned were fed in dry lot; all others creep fed on pasture.
**0.32 lb. of grain per lamb daily charged against the lambs was eaten by the ewes before pasturing began.

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TABLE 3. Effect of Early Weaning on Lamb Production
Morris, Summer, 1958

Treatment*	Lot 1	Lot 2	Lot 3
Number of lambs	28	28	28
Weaning age (weeks)	Not Weaned	13	13
Initial average weight, lb.	56.3	60.7	60.5
Number days fed	52	52	52
Average daily gain, lb.	.57**	.65	.67
Average daily feed consumed, lb.:			
Grain	1.88	1.81	1.76
Hay		1.59	
Feed per 100 lb. gain, lb.:			
Grain	330	318	271
Hay		239	

*Lot 1—Pasture with ewes and creep fed; Lot 2—Drylot, weaned at 13 weeks and creep fed; Lot 3—Pasture, weaned at 13 weeks and creep fed.

**Significantly slower gains ($P<0.05$).

TABLE 4. Effect of Early Weaning of Lambs When Fed in Drylot and on Pasture

	St. Paul, 1958			
	Drylot	Oats Rape	Oats Peas Sudan	Peas Corn
Number of lambs	16	20	20	20
Weaning age (weeks)*	10	12	12	12
Average initial weight, lb.	47.4	54.3	55.2	55.2
Number days on test	52	46	46	46
Average daily gain, lb.	.51	.44	.46	.44
Average daily feed consumed, lb.:				
Grain	1.5	Fed pasture only		
Hay	1.1			
Feed per 100 lb. gain, lb.:				
Grain	280			
Hay	210			

*Lambs were purchased for the 1958 trial so the ages are not known exactly but are based on date when ewes started to lamb as given by seller.

sumption and weight gain during the first two-three weeks following weaning?

It appears to the writers that weaning lambs at about 12 weeks of age will make it possible to raise sheep under a more intensive system. This practice could place sheep on a more equal economic footing with other farm enterprises, particularly on high cost tillable land. It could enable farmers on all tillable land to maintain a "high return" roughage consuming type of livestock without requiring extensive pasture areas.

On marginal land areas the management system of early weaning of lambs can make the best use of the land in the area, since the lambs can be pastured on the limited acreage of improved pasture and the dry ewes maintained on low productive pasture (brush, hilly, rocky) that is inadequate for fattening and growing lambs.

SUMMARY: A total of 549 lambs were used in an early weaning experiment at three different locations in Minnesota. The lambs were weaned at ages varying from 8 to 13 weeks. They were grain-fed in drylot, grain-fed on pasture or pastured without grain. Non-weaned lambs that were creep-fed on pasture served as controls for each trial.

There was no significant difference in rate of gain between lambs weaned at 10-13 weeks and non-weaned lambs. When both groups are weaned, grain feeding in drylot resulted in greater gain than pasturing without grain. Weaning at eight weeks of age does not appear as desirable as weaning at 12 weeks of age.

v v

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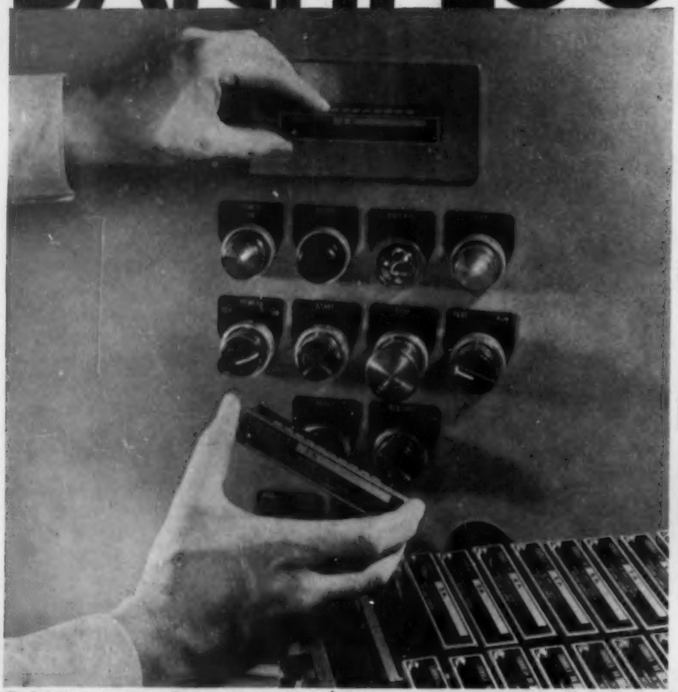

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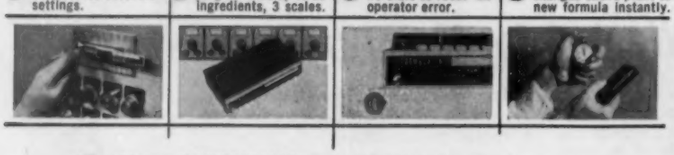

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Question: **Can a soluble grit be used?**

Dr. Heuser: For the grinding function, an *insoluble* grit is designated because it is possible to upset the mineral balance by feeding too much soluble grit. This is true in the case of calcium.

Question: **In the case of broilers, can one expect both an increase in weight and less feed to produce a pound of meat?**

Dr. Heuser: Usually both of these benefits are obtained by the feeding of grit. Even when weight gains are not obtained, the feed efficiency advantage is often shown.

When both benefits are active, the increase of each one can be smaller than when only one is effective.

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See how Santoquin saves vital feed nutrients page 113.

Urges End of Retail Stores' 2-Price System on Broilers

DULUTH, GA.—The broiler industry was told by one of the founders of the National Broiler Council that its "bad financial condition" can be traced to the "two-price" system of retail stores.

In an open letter, Charles D. Vantress, Chas. Vantress Farms, Inc., said, ". . . The industry is kept on a constant controlled overproduction basis by the two-price system. . . .

"That the broiler industry is (actually) overproduced is one of the biggest brain washes in history . . .

"The two-price system was responsible for squeezing every inefficiency out of the industry, and in that respect was good for the industry; however, when practically every efficiency has been made, leaving only further breeding gains as a means of further lowering of cost, then the squeeze of the two-price system can only result in lowering of human standards."

Under the two-price system, he said, "one price is too high, aimed at stopping flow in the stores, and one price is too low, to move the resulting surplus."

In what Mr. Vantress called "a further statement of my faith in National Broiler Council, if certain things are done," he said the "people of the substance and numbers involved in this problem will not lie down and lose by default."

He suggested as a first step that stores be asked to stop two-pricing meat chickens. Then, if this isn't done, the industry may test the two-price system in court.

Mr. Vantress said that if the practice is found to be legal, and is not stopped, the broiler industry "will then be forced into protective types of collectivism or combination."

This forced collectivism, he said, would mean "the organization of growers, flockowners and hatchery workers into AFL-CIO labor unions, feed dealers organized into trade associations for collective action and probably merger of processing plants into bigger units and/or cooperatives for bargaining power."

Further stating his stand, Mr. Vantress said, "If the powers that be in the food retail trade were completely aware that the broiler price has been squeezed below cost of production by the two-price system, that the system has already achieved its value in forcing extreme efficiency in the broiler industry, and that it has already ceased to be of much value as a traffic getter, through loss leader technique, and that a continuation of that system will force the broiler people into various forms of collectivism and combination, and that the result of this will mean considerably raised costs of production with some protected inefficiencies, making broiler meat a higher priced, semi-luxury item for the public, then I think they would give quick consideration to the end of this practice."

Mr. Vantress asked, "If the two-price system were ended, what could we look forward to in the industry?"

His answer: "In a free market supply and demand would set the price. The price charged in the store would reflect the price paid to growers.

"If this price were too high, it would come down until the flow equaled the production. Then, at any time, an individual could evaluate his business in the light of probable markets and would operate accordingly. Then we could stand a chance of improving markets by increasing demand and thus price.

"Only those would be squeezed below cost of production whose costs were too high (probably 10% most of the time instead of 95-100% as at present) and a continuing orderly adjustment would be taking place at all times while 75-90% of the industry would be operating at a legitimate profit. No one could complain about that."

Mr. Vantress said he stands on the premise that "we never have a chance to know if the product is overproduced because, except for rare, unusual occurrences such as Condition X last year, along with unseasonable cold weather, causing a

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temporary sellers' market, the industry is kept on a constant controlled overproduction basis by the two-price system in the stores.

"If strength is shown in the field, the flow is reduced to 25% in the stores by the 'too high' price level," he said. "The resulting backing up in the industry inventories certainly then is a surplus, but it has been proven over and over that a 'too low' price moves more than the industry is producing.

"In other words, never can you say 'the industry is overproduced' without questioning 'at what price to the consumer?' We know that the industry is overproduced at 49¢ lb. in the stores. We know that the industry is underproduced at 29¢ lb. in the stores. No one can say just what the maximum price is at which all of our product will sell because it never has been tried."

Here's what Mr. Vantress thinks should be done within NBC

"**First**, ask NBC leadership to unite the industry behind NBC by reaffirming the original sole intent of NBC to try to do something to improve markets through market research and promotion, clearly recognizing that the poultry industry is already well organized to represent minority segment interests and area interests through effective organizations of long standing.

"**Second**, deny to the world that we are overproduced. Admit that we have been brainwashed and have a guilt complex, regarding over-production, which we are shaking loose.

"**Third**, end at once official forecasting of broiler prices. This is a horrible injustice to the industry because . . . instead of forecasting prices, in effect, it sets prices.

"**Fourth**, make up for our former mistakes and lost time by working with every tool and speed toward the end of the two-price system.

"**Fifth**, save every dollar possible so that if the two-price system is ended, and we think improving demand will improve price, we will be ready to promote and sell chicken as never before."

Mr. Vantress said his message to the industry should not be misinterpreted "to mean criticism of the present president or of past presidents of NBC." He commended them for "a tremendous job of organization and industry diplomacy under extremely difficult conditions."

Hog Breeding Plan Studied in Florida

MARIANNA, FLA.—Plans are being studied here for a proposed farm corporation to furnish farmers with foundation herds of meat-type hogs.

The Jackson County Development Council has approved the organization of a $50,000 corporation to own and operate a farm here. R. L. Price, chairman of the council, heads a group that has made a study of breeding farms now in operation.

Plans call for the proposed breeding farm to own the gilts and boars and the farmers to own the offspring with lease earnings to the farm estimated at about $1 per pig. The annual goal at the end of 30 months is tentatively set at 58 320 market hogs.

An estimated 135 farmers in the area would participate in the program. Leaders of the program said they hope the breeding farm will help farmers produce meat-type hogs more quickly for the packers.

Cost of 13 hog units is estimated at $800. Studies are being made on costs of other breeding farms in Georgia.

Consolidating Pet Food Operations in Ohio

NEWARK, N.J. — Spratt's Patent (America), Ltd., known as the world's first dog food manufacturer, has discontinued operations at Newark and is being moved by General Mills, Inc., to its pet food center at Rossford, Ohio.

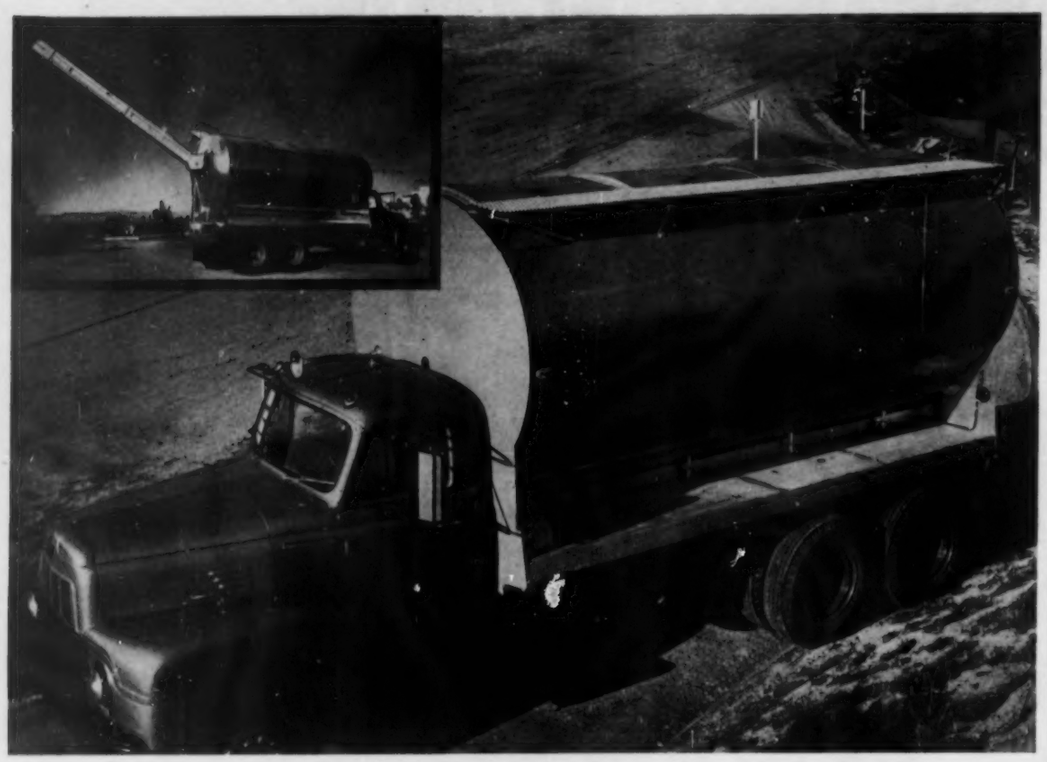
General Mills bought the formulas, brand names and other American rights to the English firm last February and is now marketing the Spratt's products.

Harry T. Radford, who was Spratt's American sales manager and is now eastern pet food sales manager for General Mills, said General Mills is consolidating its pet food operations in the Ohio plant.

Packing Plant Addition

SPRINGFIELD, MO. — The Missouri Farmers Assn. packing plant at Springfield will be expanded to increase its slaughtering facilities about four times, at a cost of about $650,000.

Jack O'Bryant, manager, said specifications for the 20,000 sq. ft. addition will soon be sent to the Missouri Department of Agriculture for approval, and that construction is expected to be started sometime this summer.



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A Report on How Formula Feeds Help Agriculture Benefit from Research

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Agriculture Responds to Science of Feeding

THE most profound scientific discovery is of little benefit to mankind unless it can be made to serve a useful purpose. This concept has given tremendous impetus to the nation's economic growth during the past 50 years, and it will continue to govern human progress in the years ahead. In the field of agriculture, its application has produced the most dramatic progress ever experienced by this basic segment of the economy.

Making science serve a useful purpose governs the thinking of scientists, of forward-looking men in industry and practical-minded livestock and poultry producers. This partnership in thought and action is the theme of this presentation.

The formula feed industry during the past 12 months observed its "Golden Year," so designated because it marked the 50th anniversary of the founding of the American Feed Manufacturers Assn. As part of this observance, Feedstuffs presented a series of articles describing advances in scientific feeding and the industry's significant role in serving animal agriculture. A group of distinguished authors (listed on the next page) contributed to the series, and from these reports the story of Science and Service has been developed.

RECENTLY ONE OF THE LEADING agricultural experiment stations observed that livestock production—as a result of research—had registered more progress in the last 20 years than in the previous 400 years.

Research in breeding for "built in" performance, in management methods and in scientific feeding all have contributed to this giant advancement. Application of knowledge gained in laboratories and experimental farms has enabled animal agriculture to surge ahead as the dominant source of farm wealth.

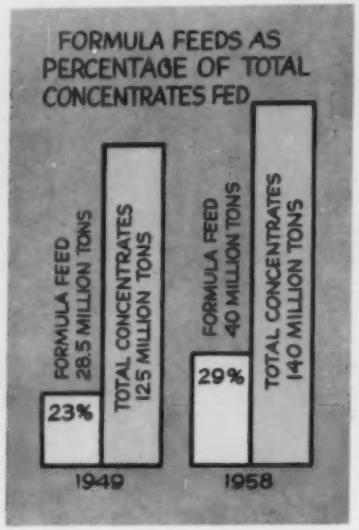
Of total farm income of $33 billion reported for 1958, nearly $19 billion or 57% was derived from poultry and livestock. In the mid-20's, farm income was derived about half from crops and half from livestock and poultry.

The bulge in animal agriculture's production is illustrated by these comparisons between 1930 and 1958 production: Turkeys, 17.4 million to 78 million; broilers, 34 million (in 1934) to 1.7 billion; swine, 74.1 million to 94.8 million; cattle and calves slaughtered, 19.8 million to 32.9 million; eggs, 39 billion to 60.7 billion; milk, 100.1 billion pounds to 125.2 billion pounds.

HOW HAVE FORMULA FEEDS contributed to this huge growth? They have provided nutritionally-balanced rations which have drastically cut the amounts of feed required to produce gains on meat animals, and they have improved efficiency in production of eggs and milk. They have enabled feeders to greatly speed up the growth rates of animals and produce more units in much less time. This has been translated into truly significant savings in labor and feed costs.

The many comparisons between results obtained with yesterday's feeding methods and today's feeds, described on the following pages, illustrate these facts in precise terms.

Bridging the gap between what is known and what is used is the mission of the feed industry. The acceptance of its products and services as key factors in livestock and poultry production is indicated by the growth of the industry to a position as the leading supplier of products used by agriculture. Tonnage of formula feed reached 40 million in 1958, compared with 28.5 million in 1949. Last year, an estimated 29% of all feed concentrates fed was comprised of formula feed. About 23% of the total in 1949 was made up of formula feeds.



Formula feeds made up almost one third of all concentrates fed in 1958, compared with less than one fourth of the total in 1949. The increase in formula feed production also is shown.

A glance backward often can help bring the present into focus and permit a clearer view of the future. Look back at this scene of 50 years ago:

Poultry husbandry was primitive. Sizeable flocks were rare, and 25-hen coops and scratching sheds were commonly used. A poultry feeding program typical of the day advised that "some grain is all right," but a part of the food for hens should consist of scalded fodder, ensilage, cooked turnips, small potatoes (fed while warm), meat scraps two or three times a week, linseed meal if fed sparingly, sweet milk, clabber and buttermilk.

Today's feeds, formulated on the basis of hundreds of research studies, delivered in convenient form and often including preventive medication

as well as nutritional ingredients, certainly change the picture of care and feeding of poultry. Similarly contrasting scenes in other farm production activities can be easily visualized.

THE FOUNDATION FOR THIS sort of scene-changing began to take on recognizable shape 50 years ago. About that time the word "vitamine" entered the vocabulary of nutritionists. The ensuing 50 years are described by some as the "age of vitamins," although other significant research, stimulated by success in vitamin research, added to feeding knowledge.

Feed manufacturers recognized the possibilities of applying nutrition knowledge to their business, and today research farms and experimental laboratories are becoming as much a part of the industry as its mills.

The simplest definition of the technique employed by feed manufacturers is to "ask the animal." The chemist can only indicate the probable worth of a feed ingredient. It must be fed to determine whether it can claim a place in the ration, and it must make its claim on the basis of economics. It must help produce food at lower costs.

In the process of evaluating data originating at college experiment stations and industrial firms supplying the feed industry, the feed industry scientist develops new feeds and feed programs and establishes proof of performance. Related products of industry research include determination of quality control specifications and development of advice on livestock feeding and production problems.

The number of qualified scientists required by the feed industry to man its research programs continues to grow. Membership in the AFMA Nutrition Council, composed of feed industry men responsible for biological research, quality control and feed formulation, now totals 87. The average member attended two colleges, earned 2¼ academic degrees and has more than 14 years of feed experience.

Each year, "Mr. Average Feed Scientist" uses 52,577 animals and poultry in conducting 152 feeding tests (approximately three a week) and has the assistance of 19 other technically trained individuals.

All together, the council members participating in the survey used 3.8 million fowl and 86,122 four-footed animals in the course of a year's experimental work.

There is much more to report on the feed industry's role in applying research to its products, including participation in scientific conferences, coordination of work with colleges, checking results on farms and a bagful of other activities.

And the feed industry's service function is not fulfilled with research alone. Its other activities, essential to its over-all performance, are described briefly at the conclusion of this report.

THE POPULATION "EXPLOSION" now under way will place heavy demands on animal agriculture to supply more meat, milk and eggs. Population is expected to jump from the present 175 million to 230 million by 1975, and economists predict that livestock production will have to be stepped up by 45% to help match food requirements.

As a partner with agriculture in food production, there is little doubt that the feed industry will explore every means possible to improve its service in bringing science to animal agriculture.

Carefully-controlled experiments are conducted at feed industry research farms to compare efficiency of different rations, test new ingredients. Swine are shown on test in this "ask the animal" research project.

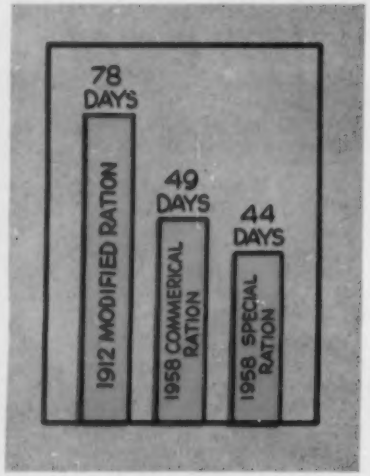
Golden Year Authors Listed

The editors of Feedstuffs gratefully acknowledge the contributions of the authors of Golden Year articles which provide the basic data for this report. They are listed below. A number of the experiments showing comparisons of present rations with those of 50 years ago were first reported at the 1958 American Feed Manufacturers Assn. convention.

Dr. H. E. Bechtel, General Mills, Inc., industry research.
Dr. W. M. Beeson and **Dr. T. W. Perry**, Purdue University, beef cattle and sheep.
Dr. H. R. Bird, University of Wisconsin, laying hens.
Eldred Cayce, Ralston Purina Co., purchasing.
Dr. G. F. Combs, University of Maryland, broilers.
Dr. L. E. Hanson, University of Minnesota, swine.
Dr. C. F. Huffman, Michigan State University, dairy cattle.
J. H. Murphy and **Dr. R. R. Spitzer**, Murphy Products Co., sales and service.
Dr. E. I. Robertson, John W. Eshelman & Sons, formulation.
Dr. M. L. Scott, Cornell University, turkeys.
L. R. Wright, the Pillsbury Co., feed production.

1 Lb. of Meat on 1 Lb. of Feed

It's Efficiency-Plus in Feeding Broilers



Time Required to Grow 3-Lb. Broiler

The chart (left) shows how the use of modern feeds has greatly reduced the time required to produce a 3-lb. broiler for market. The figures in this comparison were obtained in a University of Maryland feeding demonstration in 1958.

THE commercial broiler industry at best is no more than about 35 years old, but in those years the industry has achieved the status of a young giant. From 34 million broilers produced in 1934 (the first year records were kept), annual production has rocketed to some 1.8 billion birds in 1959.

In 1934, broilers supplied only 4.4% of the chicken meat consumed in the U.S. In 1959, broilers—bred and fed for better eating—will account for more than 80% of the chicken meat consumed by a population which is increasingly aware of the good eating obtained from this economical protein food.

This tremendous growth has not been without some economic growing pains. But it has been truly outstanding growth, and it is an example of how the intensive application of science to agriculture can bring terrific gains in production and efficiency of production.

TODAY IT IS NOT UNCOMMON for commercial broiler operators to produce 3-lb. broilers in eight weeks with only 6 lb. of feed per bird—or only 2 lb. of feed per pound of bird. Furthermore, on an experimental basis, this feed requirement has been cut just about in half—in other words a pound of meat on about a pound of feed.

Most of the almost unbelievable improvement in production efficiency has come through feeding. As research has revealed new ideas in formulation and feeding, the feed and poultry industries have been quick to turn them into more efficient, more economical meat production.

It is interesting to compare today's complex, highly fortified feeds with what chickens were fed years ago. The contrast is striking. At the turn of the century, young chicks were first fed hard-boiled eggs mixed with stale bread which had been moistened with milk. This mixture was broken into crumbles of moist consistency, seasoned with black or cayenne pepper and fed with water or milk for the first several days. After this, the feed consisted mainly of grains, beef scraps or chopped meats, grasshoppers and other insects, pounded crockery, gravel, oyster shell and clean milk or water.

One of the first dry mashes to be recommended for growing chicks consisted of cracked corn, wheat, meat scraps, grit, oyster shell and charcoal. Even then, the chicks were started on a boiled egg-rolled oats mixture soaked with milk, and then changed to dry mash fed with finely cracked corn, wheat or oats. In addition, green food, milk, water, grit, oyster shell and cut bone and sunlight usually were provided.

COMPARE THOSE FEEDS if you will with the ingredient listing on a modern, high-efficiency broiler feed. In addition to the basic ingredients supplying protein, energy and other nutrients, the feed probably will contain most of the following supplements: Riboflavin, pantothenic acid, niacin, vitamin B_{12}, choline chloride, vitamin A, vitamin D, vitamin E, vitamin K, calcium, phosphorus, salt, manganese, iodine, iron, copper, cobalt, zinc, methionine, added fat, an antibiotic, an arsenical, an antioxidant, a coccidiostat and sources of "unidentified growth factors."

The complexity of modern commercial broiler feeds is actually a reflection of the way in which the extensive research in college, government and industry laboratories and research farms has been applied in practical broiler feeding. Many of these developments have greatly reduced feed costs and materially improved results.

For example, some operators will grow 3-lb. broilers in about eight weeks with even slightly less than 2 lb. of feed per pound of broiler and a feed cost

of around 10¢ per pound of broiler. Income over feed costs, if broiler prices were 20¢ lb., would amount to more than $300 per 1,000 birds.

In addition to the research on and use of vitamins, minerals and various additives in broiler feeding, one of the most important developments has been the use of highly efficient high-energy feeds. Along with this has been the balancing of protein with energy to obtain the most efficient, most economical results. Application of the Calorie-protein ratio has permitted use of high fat levels to step up energy potency of the feeds.

As a result of all of the research and its application, we now can grow higher quality broilers on much less feed and in much less time than in yesteryear. So rapid has been the progress that performance today in the field and in the laboratory has already surpassed predictions of what we might have expected in another year or so.

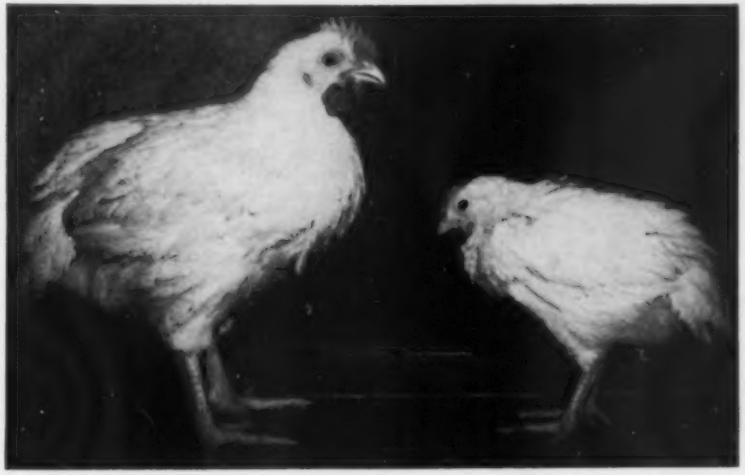
TO DEMONSTRATE THE RECENT PROGRESS in broiler feeding, the University of Maryland in 1958 conducted some special feeding trials which compared modern commercial and special feeds with rations used about 50 years ago.

In this demonstration, an old style 1912 feed was compared with a 1958 commercial broiler ration and with other special 1958 experimental feeds which were designed to give top performance. These feeds were fed to fast-growing broiler strain male chicks. The 1912 ration was taken from a college bulletin and was modified by adding some dehydrated alfalfa meal (to replace the range), vitamin D (to compensate for lack of sunlight) and insoluble grit. The birds were reared in batteries. Actually, with the modifications required to use it in confinement, the 1912 feed was more nearly like many of the rations used around 1930. Also, it may be noted that the broilers were birds with modern breeding. Even so, the feeding trials dramatically demonstrated the improvements made in broiler feeds.

Comparison of 1912 and 1958 Broiler Feeds

(University of Maryland)

	Modified 1912 Feed	1958 Commercial Feed	1958 Special Feed
44-day weight, lb.	1.14	2.62	3.02
Days required to produce 3-lb. bird	78	49	44
Feed per pound of broiler	3.03	1.79	1.04
Feed per 3-lb. broiler	9.09	5.37	3.12



This University of Maryland photograph shows the difference between a 1958 broiler ration and a 1912 feed. Both broilers are 44 days old, but the one on the right, fed the old-style feed, weighs only 1.14 lb., while the bird on the left, fed a special 1958 feed, weighs 3.02 lb. These weights represent group averages in the Maryland feeding trial.

The 1958 special rations contained relatively high levels of fat, ranging up to 50% in one ration. Some of the rations were composed only of ingredients available for use in practical rations, while others contained certain ingredients suitable for experimental diets only.

SOME OF THE RESULTS of these trials are shown in the accompanying charts and picture and are outlined here:

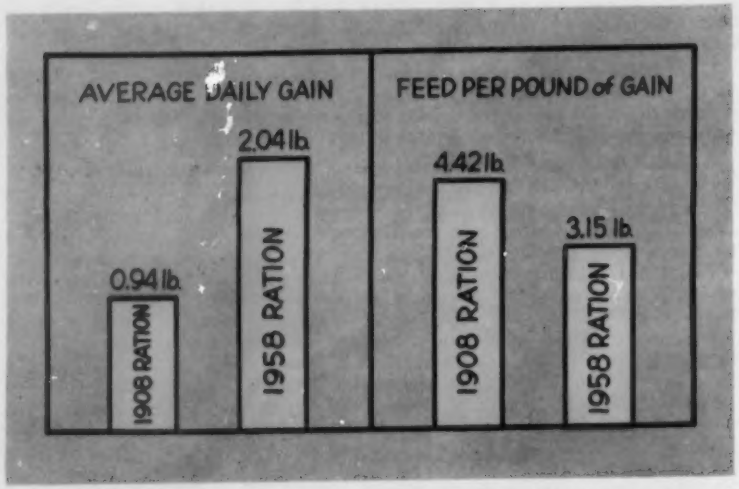
- Three-pound average weights were reached in as little as 44 days (just slightly more than six weeks) when certain high efficiency special feeds were used, while it took from 78 to 84 days to produce 3-lb. birds with the modified 1912 feed. Dressing losses were greater for the old style fed birds, and they contained less meat to bone. Birds on the 1958 commercial feed reached 3 lb. in only 49 days.

- Even with the modifications which were made, it took more than 3 lb. of the 1912 feed to produce a pound of broiler—or more than 9 lb. of feed to raise a 3-lb. bird. With the commercial feed, only 1.79 lb. of feed were required to produce a pound of broiler; this is less than 5½ lb. of feed for a 3-lb. bird. Use of the high efficiency special feeds produced birds with as little as 1.04 lb. of feed per pound of broiler, or a total of only 3.12 lb. of feed per market bird.

The results with the special feeds are just one indication that the almost unbelievable progress of the past is scarcely more than a reflection of that which is still to come in feeding broilers. As science uncovers more information about breeding, environment, management and feeding, we will see still further improvements in the future.

Pig Progress

100% Faster Gains— and on Less Feed, Too



A University of Minnesota demonstration compared a 1958 ration with a ration based on what was known about swine nutrition back in 1908. The results, some of which are illustrated here, show that we have made some outstanding improvements in feeding swine.

FIFTY years ago, many pigs did not go to market until they were 8 to 12 months of age. Today, hogs often reach market weight at five months of age or less, and they do it on a lot less feed than was required back around 1910.

Slow and generally inefficient gains weren't the only problems either in former years. Disaster frequently overtook the swine producer as disease and nutrient deficiencies exacted a heavy toll.

There still is room for a good deal of improvement in pig performance on many farms, but some major advances have been made in swine feeding. In fact, hogs now are more than just a "mortgage lifter" on many farms. They represent a specialized business yielding returns which depend in considerable measure on the application of modern scientific feeding knowledge.

The importance of putting progress in swine nutrition into practical use was demonstrated recently in a special feeding trial comparing 1908 and 1958 rations. Pigs on the modern feed more than doubled the rate of gain of the animals fed the old style ration, and the amount of feed required per pound of gain was significantly reduced.

COMPARE THE COMPOSITION of today's scientifically balanced swine feeds with feeding recommendations of 50 years ago, and it is apparent that a producer today would have to go some to show any profit if he were to follow the inefficient feeding practices of yesteryear.

Swine specialists in the early 1900's stressed good legume or rape pasture. For weanling pigs, Corn Belt authorities suggested a "formula" of corn, good legume pasture and water. In dairy regions, most recommended feed mixtures were skimmilk, corn and shorts. Tankage was suggested if milk was unavailable. Slop feeding was a consistent recommendation. Wood ashes, charcoal and salt were recommended as minerals.

Even those recommendations probably were not always followed, and if disease or other problems did not wipe out many of the pigs before they got to market, it took the farmer about twice as long to raise his pigs as it does today.

Pasture was indispensable 50 years ago. Today, on the other hand, knowledge of nutrient requirements and the development of newer ingredients in feeds have made pasture unnecessary in the feeding of market pigs. Many producers are shifting their feeding operations from pasture to concrete floors, and this practice no doubt will grow.

WHAT'S BEHIND THE IMPROVED FEEDS and feeding results? Actually, it's a combination of many things. Researchers have dug into the what and why of protein and protein sources, minerals, vitamins and new feed additives. Put the accumulated knowledge together in modern, balanced formula feeds, and you have the basis for rapid, efficient, profitable pork production.

For example, feeding of an up-to-date supplement and corn to hybrid hogs from 45 lb. to market at 200 lb. has given results like these:

- 1.92 lb. average daily gain.
- 3.19 lb. of feed per pound of gain.
- Feed costs of less than 8¢ per pound of gain in live body weight.

This kind of performance has been made possible by the contributions of experiment stations, feed manufacturers and their suppliers, veterinarians and extension workers. The net effect of the feed industry's putting scientific knowledge into its feeds and services has been to close the gap between research results and feeding practices. Fifty years ago, the gap was anywhere from 10 to 20 years. Today the better producers are actually crowding research workers for results.

JUST HOW DOES A MODERN RATION compare with a ration based on what was known about swine nutrition back in 1908? Some answers to this question were provided in a feeding demonstration conducted at the University of Minnesota. A 1958 ration was fed to one group of pigs, while another group received a "1908 ration" based on 1908 nutritional knowledge rather than actual practice. The pigs used were crossbreds resulting from the rotational crossing of three inbred lines.

Three University of Minnesota professors are looking over results of a demonstration comparing 1908 and 1958 rations. The pig on the left was fed a modern, balanced, high-energy ration. The pig on the right received a ration containing the same amount of protein but imbalanced with respect to amino acids, deficient in some vitamins and containing no antibiotic. (University of Minnesota photo)

Progress in Swine Nutrition, 1908-1958

(University of Minnesota)

	1908 Ration	1958 Ration
Number of pigs	3	3
Average initial weight, lb.	60	58
Average final weight, lb.	109	164
Average daily gain, lb.	0.94	2.04
Feed per pound of gain, lb.	4.42	3.15

The 1908 ration was composed of ground corn, linseed oil meal, wheat middlings, ground limestone and salt. The 1958 ration was a modern, high energy ration composed of corn, soybean meal, steamed bone meal, trace mineralized salt (high zinc) and a vitamin-antibiotic mixture.

The results are summarized in an accompanying table and chart. Actually, it should be noted, the figures on feed efficiency are biased in favor of the 1958 ration. That's because time did not permit feeding the pigs to the same final weight. There is further bias in that the "1908 ration" pigs were fed modern rations until they were placed on the test. Even so, the results show a marked improvement in feed utilization with the modern ration. And, in general, it is very clear that solid progress has been made in swine nutrition.

THIS PROGRESS HAS INVOLVED proper balancing of nutrients and ingredients as well as the development of these things individually. An example of this is found in the recent research with zinc and calcium in swine feeding. If there is too much calcium or not enough zinc in the ration, an abnormal skin condition called perakeratosis results. As a result, extra zinc is now added to most swine rations, and parakeratosis and decreased performance from zinc deficiency are seldom problems—if the producer takes advantage of modern feeds.

The research with zinc and calcium has shown us just how important it is to maintain the right balance of all nutrients. There must be enough of each nutrient in the ration, but too much can be just about as bad as not enough.

Yes, swine feeding has shown some real progress in the past 50 years. The only reason pigs got to market in the usual 8 to 12 months some 50 years ago was because of summer pasture, garbage, scraps or skim milk. That, it is clear, was a pretty shaky basis upon which to rest a swine feeding industry.

Now, in striking contrast, swine feeding has the firm foundation of accumulated nutrition knowledge translated into up-to-the-minute complete feeds or supplements. And on this foundation, scientists, the feed industry and feeders will build for still further progress in profitable pork production.

Today's Layer Puts Ancestors to Shame

Eggciting and plenty to crow about are feed and other developments which have doubled egg production efficiency.

FIFTY years ago, the average hen in the U.S. laid 104 eggs per year. Today the average layer will shell out some 200 eggs per year, or just about twice what her ancestor was able to do a half century ago.

When you double production per unit—whether it is per acre, per animal or per bird—you have certainly made some progress. And that is just exactly what science and agriculture have accomplished in the production of one of our best foods.

Furthermore, many poultrymen are now producing eggs for market on at least 45% less feed than their grandparents had to use 50 years ago to turn out a dozen eggs. That's really cutting a healthy slice off the feed bill.

WHEN YOU COMPARE modern methods of egg production with conditions as they existed back in 1909, it's easier to see why there could be such a marked improvement in performance. The average layer of 50 years ago was a member of a small flock. She was kept in a small house which was ventilated through cracks around the door and windows. Because Old Biddy didn't have artificial light in the winter, she laid most of her eggs in the spring and summer. When it came to feeding, nobody even gave any thought to her vitamin requirements. If her intake of amino acids (the building blocks of protein) was balanced, it was only by accident. Most of the time the protein in her feed was inadequate in both quantity and quality. She was not vaccinated or blood-tested. When you stop and think about it, it's a wonder any of the birds even lived, to say nothing about laying eggs.

Needless to say, there have really been some changes made. With modern breeding, housing, management and feeding, many flocks are turning out eggs at rates well past even the average of 200 eggs per year.

- Modern strains of layers are topping a 70% production rate for a year's laying period.
- Feed requirements may be only about 4 lb. per dozen eggs, compared with around 8 lb. 50 years ago.
- Feed costs may well be in the neighborhood of only 15¢ or less per dozen eggs.
- Furthermore, modern feed, while much better nutritionally, actually costs slightly less per cwt. than a formula of 25 years ago. And that's basing both on present ingredient prices.

Breeding—providing birds with the built-in potential for greater production—and management have had much to do with the remarkable gains in rate and efficiency of egg production. But modern, balanced feeds can share well when credits are passed out. Such things as disease control and housing are mighty important, too.

It has been pointed out that there are various ways to improve efficiency of egg production. One way is to increase rate of production per hen, and it is this which has received the most attention from colleges, the feed industry and the poultry industry.

THE PROGRESS WHICH HAS BEEN MADE in increasing rate of lay is shown graphically in an accompanying chart. It is apparent that the most rapid improvement has come in recent years.

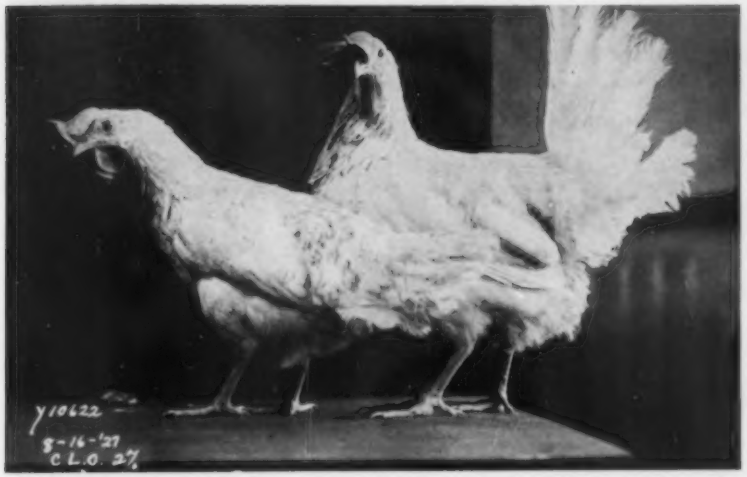
There are no official statistics which show the changes in efficiency of converting feed into eggs. However, scientists have shown a relation between rate of egg production and efficiency when other factors remain constant. Of course, these other factors haven't remained constant, but it is interesting to figure out the efficiencies that can be expected when production rate alone changes. This has been done in the accompanying chart, showing the reduction in pounds of feed per pound of eggs. The calculations indicate that 5½

lb. of feed were needed to produce a pound of eggs 50 years ago, but only about 3.4 lb. recently. Using the dozen as a measure, this would mean 8¼ lb. of feed per dozen eggs 50 years ago and only about 5 lb. more recently. That's quite an improvement. In fact, it has been estimated that if egg production were still only 104 per layer, feed to produce the eggs we now use would cost the poultry industry an extra $425 million a year.

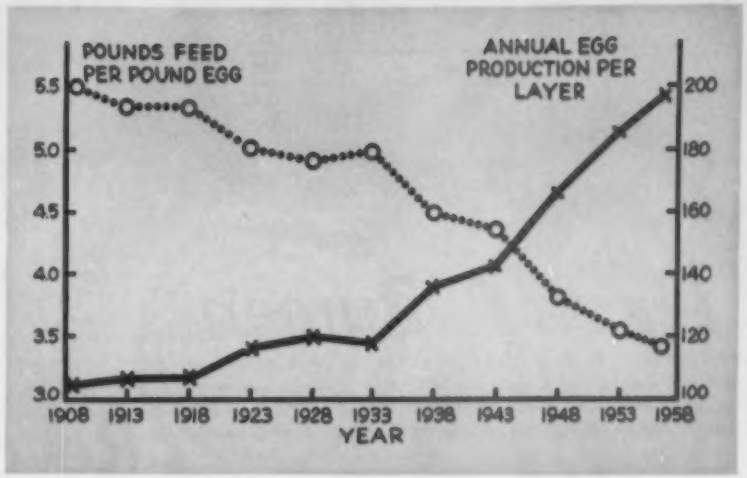
Actually, many producers now do considerably better than 5 lb. of feed per dozen eggs. Modern, high efficiency feeds, as well as modern strains of laying birds, have been an important factor in getting feed requirements down to around 4 lb. per dozen on a practical basis.

Even if average egg production per layer comes up and levels off near the high rates attained under the most favorable conditions, there still will be room for improvement in feed efficiency. For one thing, boosting the energy content of an otherwise balanced diet will increase the number of eggs per unit of feed consumed. That's why high energy feeds have come into the spotlight.

THE INCREASE IN ENERGY is just one example of the way in which feed manufacturers have put new research information to work for the producer's benefit. It is the proper balance of nutrients—protein, energy, vitamins, minerals—that counts, and it takes a balance of various feed ingredients to achieve it.



This University of Wisconsin picture illustrates one of the most important developments in poultry feeding—the discovery of how vitamin D in the feed permits keeping birds inside in confinement. Back in the 1920's, these pioneer pullets were raised to maturity indoors, with 2% of cod liver oil in the feed.



The rate of egg production per layer has continued to climb, and the amount of feed required per unit of egg production has dropped steadily, meaning lower feed costs for the producer.

It is interesting to show how various ingredients have come into the picture over the years. And as they have come, it has been possible to formulate successively better feeds.

During the first part of this century, the official list of ingredients included only such things as the grains, alfalfa meal, meat meal, corn gluten meal, cottonseed meal and millfeeds—which is pretty slim in comparison to the list you are likely to find on a feed tag today.

Added to the list in succeeding years were such things as peanut meal, fish meal and dried milk products. Then in 1923 came one of the most important discoveries—that the vitamin D which chickens needed could be supplied by putting cod liver oil in the feed or by providing direct sunlight. When it became possible to put vitamins A and D in the feed, the poultry industry was able to move indoors and produce efficiently the year around. Added to the list later were such ingredients as bone meal, iodized salt, calcium and phosphorus sources, other minerals, dried whey, the very important soybean meal, synthetic vitamins (which have reduced the cost of feeds), distillers products, vitamin A and D sources, antibiotics, more vitamin supplements and animal fat. This partial list is another indication of the complexity of modern formulation of nutritious feeds at the least cost.

However, that complexity is part of the story of better feeding. And better feeding certainly is part of the important story of more efficient, more potentially profitable egg production.

150% Gain in Production Per Cow

The Rumen Revolution

THE rate of milk production per cow has increased more than 150% during the past 50 years. The number of milk cows on farms in the U.S. has been dropping off in recent years, but total milk output has held up or increased because of the bigger production per cow.

Better feeding as well as breeding has had much to do with this remarkable record.

The average milk production per cow per year is now about 6,300 lb. And many cows do far better than this. In fact, there is no reason why we should not aim for an average annual production of at least 10,000 to 12,000 lb. of milk per cow, or about double the present average.

Part of the improvement in feeding results can be attributed to greater knowledge of what goes on inside the cow's rumen or paunch. However, there is room for a lot more progress, and that progress is sure to come. One big reason is that we are in the midst of a "rumen revolution." Scientists are now able to cast more light into the rumen, which is no longer such a dark, mysterious part of the cow's anatomy.

JUST HOW ARE WE DOING today? One industry scientist cited the following as typical good results:

A milk production test, using Holsteins on a 10-month lactation—

- 45.8 lb. average daily milk production per cow.
- 0.97 lb. feed efficiency (dry feed basis per pound of milk), with 0.32 lb. from formula feed and 0.65 lb. from hay and silage.
- 1.47¢ feed cost per pound of milk.
- $2.53 income over feed cost per cwt. of milk @ 4¢ per pound.

Of course, before the cow reaches the point where it is producing milk, there is the period of growth and development. It is in the feeding of the young dairy calf that the formula feed industry has played a particularly important role.

Fifty years ago, calves (which come into the world as non-ruminants) were usually fed whole milk for about two months and skim milk to about six months of age. Either coarsely ground or whole cereal grains were also fed along with hay. This system of raising calves was adapted to farmers where cream was sold. Then the expanded whole milk market, brought about by a greater appreciation of milk as a food, increased the need for good milk replacers.

THE FEED INDUSTRY has provided these milk replacers, making it possible for the dairy farmer to feed his young calves economically and well while still selling his whole milk.

Milk replacers have four chief advantages: (1) Economy, (2) nutrition, (3) health and (4) rumen development.

The economy is in the saving in whole milk. For example, a test with identical twin calves showed that at the end of their eighth week, one fed on 54 lb. of milk replacer and only 20 lb. of whole milk along with starter pellets, grain and hay weighed just about the same as the sister fed with 441 lb. of whole milk and no replacer along with starter pellets, grain and hay. Feed costs per pound of gain were 21.5¢ for the calf fed milk replacer and 34.7¢ for the sister. The dairy farmer can save about $8 per calf, and millions of pounds of milk are saved for human use.

As for nutrition, the improvement with replacers is very clear in tests

showing that replacer-fed calves grow 30 to 40% faster than those on whole milk. Health is mighty important, too. With the nutrients, antibiotics and other additives in replacers, calves have less digestive disturbances and are healthier and sturdier. Early development of the rumen in the calf also is important, and calves fed milk replacer will show rumen activity as much as two weeks earlier.

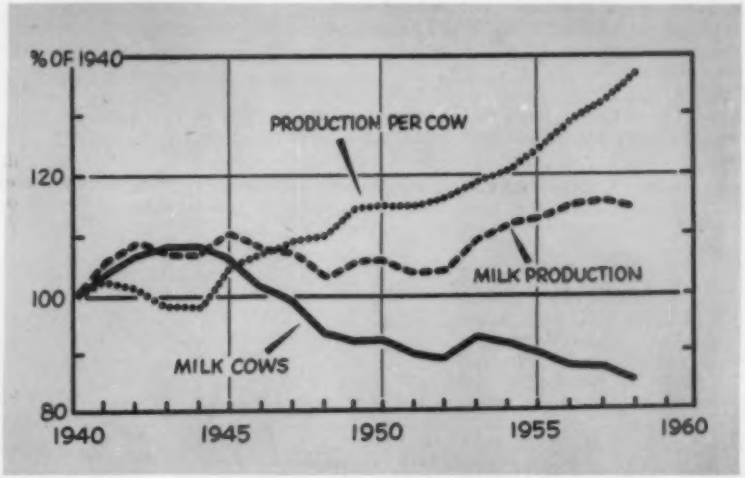
Going beyond just the milk replacer aspect of calf feeding, one comparison has shown that the cost of feeding a dairy calf to eight months is about 40% less on a modern program than it would be if calves were still fed as they were on a typical program of 30 years ago.

However, feeding the dairy calf is only the start in production of milk. The cow, with her ability to convert roughage as well as concentrates into a valuable food, is an important food factory. That is why so much attention has been given to what goes on inside the cow's rumen or "fermentation vat."

AS A RESULT OF THE "RUMEN REVOLUTION," we now know that rations should be geared to the rumen. The "bugs" in the rumen can turn hay into milk through their ability to digest sugars, starches, cellulose and related compounds. The bugs also convert proteins and other nitrogen compounds such as urea into ammonia. Fatty acids in the rumen synthesize the ammonia, and the rumen bugs then synthesize or build this ammonia into protein that can be used by the cow in her body.

Actually, dairy cattle feeding had a good start even 50 years ago, thanks to the advances in the art of feeding and to some extent to the science of nutrition. This early progress was primarily due to the fact that cows are geared to transform large amounts of roughage into milk. Forage supplied dietary factors needed to supplement grains. Also, the food constituents made by the microbes in the cow's fermentation vat made better feeding possible long before vitamins were discovered or, in fact, before we knew about bugs in the rumen.

This is a 2,300-lb. rumen fistula (window) steer used in casting light into the fermentation vat of the animal. The fistula has opened the way to studies of rumen microbes, digestion, fatty acids and how they are produced, and the manufacture of proteins and vitamins. (Mich. Agr. Expt. Sta. photo)



Better feeding has made a big contribution to the increase in milk production per cow which has more than offset a decline in numbers of milk cows on farms.

However, there were not many scientific studies of the fermentation vat until fairly recently. During the 1930's it was shown that rumen microbes digest fibrous feeds by producing enzymes that do the job. This was a big step since the ruminant itself does not produce such enzymes. Another major advancement came with the finding that rumen microbes can make high quality protein from simple nitrogen compounds such as urea.

The forward progress continued in the 1940's. Scientists showed that rumen microorganisms convert carbohydrates (starch, sugar, celluloses, hemicelluloses) to certain fatty acids in a certain ratio. They also proved that these fatty acids were absorbed through the rumen wall. A good share of the energy that cows get from their feed comes from these acids.

ALTHOUGH MANY FACTORS have contributed to the big increase in rate of milk production per cow, most authorities agree that better feeding has made the greatest contribution. Marked improvement in the nutritive value of pasture, hay and silage crops has done a great deal. Also important is the increased amount of grain and other concentrates fed to milk cows. The estimated amount in 1942 was 1,200 lb., compared with more than a ton per cow yearly today. Modern formula feeds have had an important place here. In the early 1930's, about 15% of the concentrate rations fed to milk cows were manufactured feeds. Today, formula feeds account for close to 30% of all grain and concentrates fed to milk cows.

35% Gain in Feed Efficiency

Talking Turkey

IF turkeys were still fed the same way they were back in grandfather's day, costs for the grower would actually be a lot more than what he could sell the birds for. His costs of feed, labor and death losses wouldn't even let him compete with producers of other types of meat.

However, rapid progress has been made in the breeding, feeding and management of turkeys—particularly in the last several years—and there have been some good returns for efficient producers.

You don't even have to go back 50 years to see the progress. Just since the 1940's, the time it takes to get a Broad Breasted Bronze turkey ready for market has been cut more than 20%. Feed efficiency has been improved at least 35%. And death loss is less than a fourth of what it was. (See the table and chart showing the improvements that have been made.)

Such improvements as these are dramatic. But we haven't seen anything yet. When science really learns how to take advantage of what the turkey is capable of doing—through still better breeding, incubation, management and feeding—the bird will be one of our best converters of feeds into highly nutritious food. It's reasonable to think in terms of a pound of turkey being produced with only 1½ lb. of feed.

Even a brief look at the past, present and future makes progress in the turkey industry stand out like a toe in an old sock.

BACK ABOUT 50 YEARS AGO there was no turkey industry as such. It was the "Barnyard Era" of turkey raising. Books on turkey raising advised farmers to start turkeys off by feeding "plenty of sting nettle, chopped fine, with hard boiled eggs and red pepper." A few days later the birds got "a mixed feed, a little wheat bread soaked in milk, squeezed dry, and mixed with the egg and nettle." And so on it went.

The product of all the fussing and worrying, if the bird lived at all, was a skinny, razor-breasted turkey which was a far cry from today's broad breasted breeds.

From the "Barnyard Era," turkey raising moved into the "Trial and Error" period, which lasted into the late 1940's. During this period, there still was not very much scientific information on turkeys, especially the feeding of turkeys.

MOST TURKEY RATIONS contained high amounts of high-fiber, low-energy ingredients. We now know that many of the troubles in starting

A Revolution in Turkey Feeding

	Past	Present	Future
Age marketed, weeks	28-32	22-26	8-22
Weight of hens, lb.	16	16	12-16
Weight of toms, lb.	25	27	12-25
Lb. feed/lb. turkey	5.47	3.9	1.4-2.8
Mortality	18%	4%	under 2%
Leg weakness	10%	under 2%	under 1%

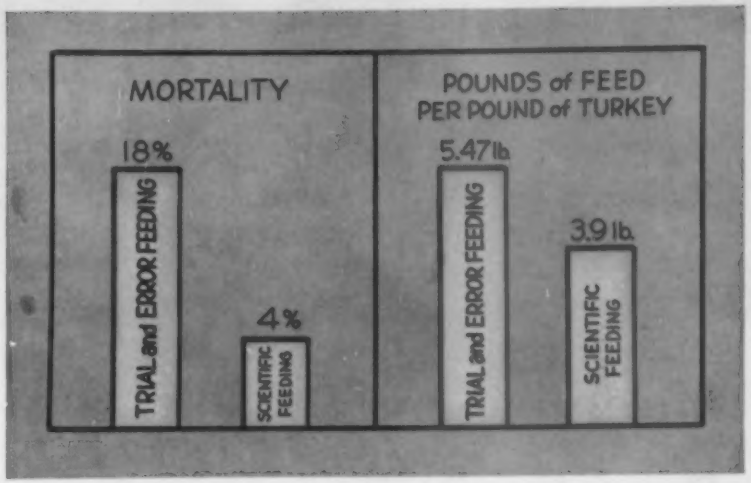
These comparisons (left) of Broad Breasted Bronze and Broad Breasted White turkey performance make it easy to see past and future progress in turkey feeding. The "past" column illustrates "Trial and Error" feeding—the period of expensive, highly fortified, low protein-low energy feeds. The "present" column shows results in today's "Scientific Era" of inexpensive, accurately fortified, high protein-high energy feeds. In the future we will have even more precise feeds. And the right finishing rations, together with use of hormones, mean turkeys will be produced with acceptable finish at any age after 8 weeks. In addition to the weights shown, we will have young roosters at 6-10 lb.

poults in those days resulted because these high-fiber rations were not palatable to young turkeys. Feeding such rations resulted in a high percentage of starve-outs, caused uneven rates of growth and poor efficiency in converting feed to meat.

Disease problems also took their toll. For example, while improvements were made in feeds, blackhead caused the death of many turkeys. Finally it was found that blackhead was caused by a microorganism carried by chickens and passed on to turkeys. Then turkey growers began to raise their birds in confinement. But this wasn't without its drawbacks. Isolated turkeys no longer had access to lush, green pastures, and many of them grew poorly or became crippled from leg weaknesses.

However, science was at work, and turkey feeding passed into the "scientific era" of the past 10 years. It has been during this period that the industry has shown its greatest growth and progress. The farmer who started 200 poults in the spring of 1908 has been replaced by a grower who may have produced 35,000 turkeys in 1958. Annual turkey production has climbed to some 80 million birds. That's five times as many as in 1930 and 2½ times the number raised just a decade ago. And it all has been done with less feed per bird and a lot less disease loss—losses which once made turkey a mighty expensive meat, served only on special holiday occasions.

HOW IS IT THAT TURKEYS can now be produced so efficiently and economically? For one thing, we now have high energy rations which get young poults off to a fast, uniform start and cut down a good deal on the amount of feed required to produce a pound of turkey. Also, we know how to balance protein with energy. Then, too, scientists in colleges and industry have come up with important findings in research on such things as vitamins, minerals, antibiotics and other drugs, the so-called unidentified growth factors in feeds, and ways to get better market finish.



Turkey performance has really improved in recent years, as this chart shows. Comparing the scientific feeding of today with "trial and error" feeding of some years ago, mortality has been cut sharply, and feed efficiency now is much better.

There's a lot of difference between today's oven-ready, broad-breasted turkeys (left) and yesterday's New York dressed "razor-breasted" turkeys (right).

How has this research helped? Research on energy, for example, showed how we could increase the energy concentration in turkey rations through use of high-energy grains and animal and vegetable fats. At the same time, we were able to get a better understanding of the relationship between protein and energy levels in the feed. Similarly, we learned how to provide vitamin supplementation needed in modern high energy feeds, and economical vitamin supplements became available. In research with minerals, it was found, for one thing, that zinc is required at a minute level, along with certain vitamins, to prevent weak legs and enlarged hocks in turkeys. Research on additives like antibiotics was mighty important, too, to stimulate growth and prevent disease problems.

In all of this, feed manufacturers were Johnny-on-the-spot in translating research findings into improved turkey rations, resulting in faster and more economical growth, better returns for producers and a nutritious meat product at a reasonable cost. Yet, scientific and industry progress of the past 50 years may be just a preview of tomorrow. It will be worth watching.

Modern Feeds Are Real Profit-Boosters for Beef Cattle and Sheep

1908 vs. 1958 Ration for Beef Cattle
(Purdue University)
(Identical Twin Hereford Steers—Fed 63 Days)

	1908 Ration	1958 Ration
Initial weight, lb. (approximate)	400	400
Total gain, lb.	132	170
Daily gain, lb.	2.1	2.7
Daily feed, lb.	14.0	11.8
Feed per pound of gain, lb.	6.7	4.4
Cost per pound of gain, cents	12.7	9.4

THE feeding of beef cattle and sheep has come a long way in the past half century, with much of the progress showing up in just the last several years.

Improvements in feeding results have been especially great as exacting scientific research, translated into up-to-date rations, has come to the fore. In fact, it has been pointed out, science and technology are replacing the "art" and "eye" of cattle feeding. And the proper supplementation of cattle rations is becoming just about as complex as modern poultry and swine diets.

When this modern technology is put to work in the feedlot, beef profits are really beefed up. The same thing goes for lamb feeding. For example:

- In a comparison of typical 1958 and 1908 rations for beef cattle, use of the modern feed increased weight gain by nearly 30%, improved feed efficiency about 35% and cut feed costs more than 25%.
- When 1958 and 1908 rations for fattening lambs were compared, it was found that the 1958 feed stepped up daily gain 150%, reduced the feed requirement nearly 35% and cut feed costs per pound of gain by 10%.

ADVANCES IN CATTLE NUTRITION progressed rather slowly until scientists started studying the bacterial flora in the rumen. This led to a new concept in ruminant nutrition showing that part of the "key" to feeding cattle was to provide the necessary nutrients for lush bacterial life in the rumen. Basic research has shown that there are certain nutrients required by rumen "bugs" for maximum roughage digestion. We are now feeding the billions of "bugs" in the rumen which, in turn, feed the animal.

This knowledge, plus new developments in feed practices, growth stimulants and disease prevention, has made it possible to formulate and feed rations that give results showing up readily in the feeder's checkbook balance.

Of importance in cattle feeding has been research on such things as rumen factors, rumen synthesis of certain vitamins, sources of protein, minerals, vitamins included in the feed, known factors, hormones, antibiotics, and other additives. Other important research has dealt with pelleting, methods of self-feeding and free-choice feeding, and bloat and parasite control.

TO DEMONSTRATE THE VALUE of modern nutritional "know-how," Purdue University scientists fed a set of identical twin Hereford calves on a typical 1908 ration and a modern 1958 ration. Identical twins, it may be noted, are the result of one egg splitting so inherited characteristics are the same—which makes the comparison with the two steers more significant.

The steers, weighing about 400 lb. initially, were fed for 63 days. The 1908 ration included shelled corn, linseed meal, timothy hay and salt. Shelled corn was full-fed and hay was fed free choice to the twin getting the old style ration. The other steer received a 1958 ration consisting of ground ear corn, molasses, Purdue Supplement A (soybean meal, molasses, dehydrated alfalfa, bone meal, salt, cobalt, vitamin A and D concentrate), plus antibiotics and a tranquilizer. The entire ration was pelleted, and the steer was implanted with stilbestrol.

Results of the comparison are shown in an accompanying table. The marked improvements with the modern feed show up dramatically.

ANOTHER COMPARISON made at Purdue is of interest, too. For years, the standard feedlot practice was to feed straight oilseed meal to cattle. This era is steadily becoming a thing of the past. Research has shown that in

addition to protein, cattle need other nutrients to balance the deficiencies of the average feedlot ration. That's why, the scientists say, a good cattle supplement will include (in addition to good sources of protein) sources of unidentified factors, energy and palatability, certain minerals, and vitamin A.

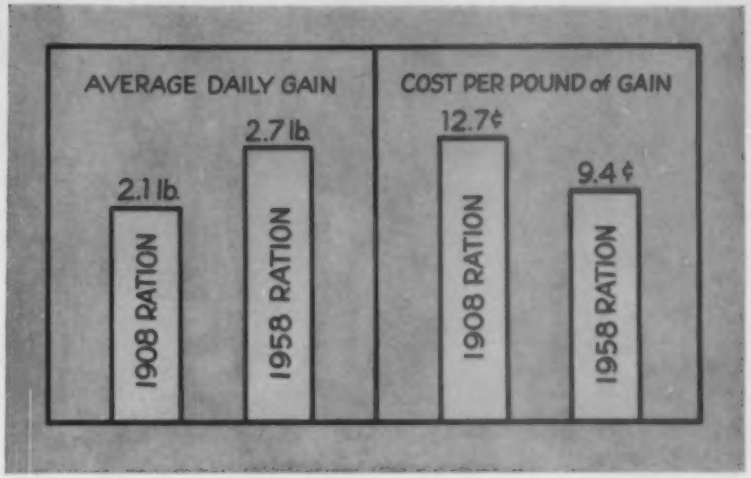
To show the value of a supplement like this, Purdue researchers ran an experiment comparing a mixed supplement with straight soybean meal in balancing a fattening ration for steers. One group was fed soybean meal. The other group was self-fed on a mixture of eight parts of ground ear corn and one part of mixed supplement. No additives were used in this supplement. The animals were on feed for 213 days.

The mixed supplement brought a significant improvement in daily gain (2.44 vs. 1.62 lb.); lower cost of gain (17 vs. 18.68¢ per pound); higher carcass grade (9 choice and 3 good vs. 9 good and 2 standard); higher dressing percent (61 vs. 59); higher selling price (22.5 vs. 20.5¢ per pound); and $32.74 more profit per head over feed cost (a $23.36 profit vs. $9.38 loss).

WE HAVE COME A LONG WAY in sheep nutrition, too. As with beef cattle, this was dramatically shown in a feeding trial at Purdue University. Lambs were fed for 42 days on a typical 1908 ration and a complete pelleted 1958 ration. The 1908 ration included shelled corn, linseed meal, timothy hay and salt. The pelleted 1958 ration for fattening lambs included ground corn cobs, dehydrated alfalfa, ground corn, soybean meal, salt, cobalt, bone meal and vitamin A and D concentrate. The lambs were also implanted with stilbestrol.

The right nutrients plus the pelleting brought some outstanding improvements. Lambs fed the complete pelleted ration gained 152% faster on 34% less feed per unit of gain than lambs on the 1908 diet. And the cost per pound of gain was cut 10%. (Details in an accompanying table). That's real performance.

And performance it is that modern feeds for beef cattle and sheep are designed for—performance that pays off in the feedlot.



Proof of the feed is in the feeding, and here are some of the results of a test comparing 1908 and 1958 rations for Hereford steers. The modern ration (pelleted) brought some remarkable improvements.

When all the new knowledge gathered in nutrition, for any one type of animal, is compared with a typical ration used decades ago, we can usually see a marked improvement in performance. This is especially true in sheep feeding. Experiment station research, illustrated in this picture taken at Purdue University, has greatly increased knowledge.

1908 vs. 1958 Ration for Fattening Lambs

(Purdue University)

(Average of 8 Lambs per Group—Fed 42 Days)

	1908 Ration	1958 Ration
Initial weight, lb.	70	70
Final weight, lb.	86	110
Daily gain, lb.	.38	.96
Daily feed, lb.	3.0	5.0
Feed per pound of gain, lb.	7.9	5.2
Cost per pound of gain, cents	11.7	10.5

Service Formula Designed to Fit Feeders' Needs

THE most clear-cut objective of the formula feed industry is to help farmers produce food at maximum efficiency and profit.

Scientific evaluation of the nutritional needs of livestock and poultry enables the industry to formulate feeds that can do the job feeders want them to. However, this basic function must be supported by other skilled services before feeding for profit can be a reality.

Performance of these operations—procurement of ingredients, manufacturing and distribution—presents additional opportunities for the industry to make its products more valuable to feeders.

The very economy of the conversion of feed into meat, milk and eggs requires that the best buy in the market at a given location be used for each particular nutrient. Each feed mill is a blending unit capable of putting together as many as 100 different ingredients from a variety of industries, and the purchasing agent must keep in constant touch with market developments. He also serves as the first line of defense in protecting feed quality.

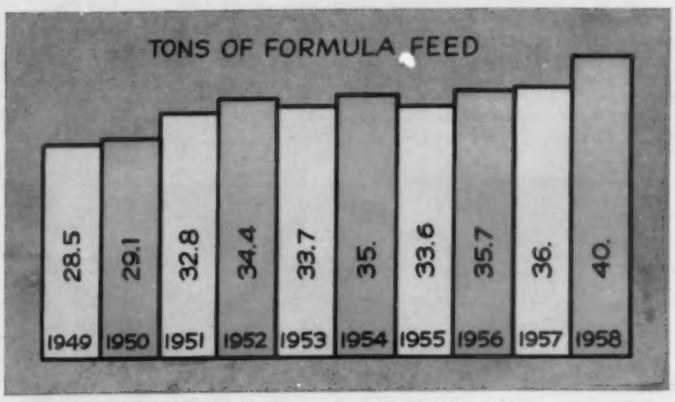
ONCE INGREDIENTS ARE IN THE mill, the production department is called upon to apply its skill in producing feed to the specifications of the nutritionist. Accurate measurements, thorough blending and efficiency in moving ingredients into the mill and finished feed out all require precision planning by production supervisors.

Feed manufacturing efficiency probably has shown more improvement in the past 10 years than in the previous 40 years, and efforts to reduce costs of production in order to pass savings on to feeders get intense attention.

Automatic controls and weighing devices, more efficient grinding and mixing equipment, speedier conveying methods and other cost-trimming elements now make it possible to produce feed at a rate of .3 man hour per ton in a specialized plant or not more than 1.5 per ton in a plant turning out a full line of feed. More economies in manufacturing are on the way.

THE SCIENCE BUILT into a batch of feed finds its way "home" with the guidance of sales and service personnel of feed companies. It has been stated that nutrition losses, severe and borderline, are still a major cause of income loss even on the best farms. Feed dealers and manufacturers' field representatives are on the scene to help combat these losses in a most direct way—bringing the facts of scientific feeding to feeders.

The distance in time between laboratory and farm continues to grow shorter as the feed industry improves its formulas of science and service.



Feed output gained 58% in 10 years. Poultry feed made up 58% of the 1958 total, followed by dairy feed, 17%, and swine feeds, 14%.

50 YEARS OF afma SERVICE
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Progress that has been made in scientific feeding is graphically presented in this Science and Service report. It is published in observance of the feed industry's Golden Year, the 50th anniversary of the founding of the American Feed Manufacturers Assn. Information on availability of reprints may be found on page 6 of this issue.

FEEDSTUFFS The Miller Publishing Co. Minneapolis, Minn.

Teenagers 'Beef Up' Hamburger Demand

WEST LAFAYETTE, IND.—Hamburger-hungry teenagers hold a key to a bright future for the U.S. beef cattle industry.

That's the forecast of J. Carroll Bottum, agricultural economist at Purdue University. Speaking at the recent Indiana Cattle Feeders Day here (Feedstuffs, April 25), Mr. Bottum told an estimated 1,800 persons that the prospect of an increasing teenage population between now and 1965 is an encouraging demand factor working for the beef cattle producer.

Not only do teenagers eat about 20% more than the average person, but they will increase in number from 25 million to 34 million—about 35%—between 1958 and 1965, Mr. Bottum said.

"This," he said, "will result in a special emphasis on hamburgers and hot dogs."

A second encouraging demand factor pointed out by Mr. Bottum is the expected rise in consumer income in the years ahead. As income rises, consumers tend to buy more beef relative to other meats, he said.

W. D. Farr, Greeley, Colo., a large-scale cattle feeder who also was on the Purdue program, said that "if the industry will accept the responsibility of giving Mrs. Housewife as near perfect beef as possible, future beef consumption will be higher."

Per capita beef consumption in the U.S. last year was 87.3 lb.

An election of officers held by the Indiana Cattle Feeders Assn. as part of the program resulted in the naming of Wendell Morton, Lebanon, to the office of president. Hugh Boswell, Denver, Ind., was named vice president, and Dr. W. M. Beeson, acting head of the Purdue animal science department, was reelected secretary-treasurer.

Continental to Open New Orleans Office

NEW YORK—With good progress being made on the construction of the new grain elevator for Continental Grain Co. at New Orleans, Michel Fribourg, Continental president, has announced plans to open a New Orleans office Sept. 1 so that it can become fully functional before the elevator is completed near the end of the year.

Kurt Horn of Continental's St. Louis office has been named to manage the New Orleans operation. He will assume his duties there about Sept. 1.

William Blood and other employees of Eiseman & Co., a Continental subsidiary in New Orleans, will join Continental's new office.

Mr. Fribourg also announced the opening of a forwarding office at Duluth, Minn., in anticipation of heavy seaway traffic through that port. Thomas Stanley of Continental's Buffalo office will handle the forwarding at Duluth. The office will be ready for operation in time to handle first shipments.

Plans Broiler Program

LAKE, MISS.—B. C. Rogers, Morton, has purchased 780 acres of land south of Lake for an eight-unit broiler production program. According to plans, each unit will have three houses—fully automatic—for 42,000 birds. It is possible that a feed mill will be constructed later, it is reported.

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This pen received Product A—one of the prominent commercial products available for preventing blackhead.
Results at the end of the test period
Mortality due to blackhead 40% % severe liver lesions 45%
% severe cecal lesions 55% Feed conversion 3.29

This pen received Product B—another of the prominent commercial products available for preventing blackhead.
Results at the end of the test period
Mortality due to blackhead 35% % severe liver lesions 10%
% severe cecal lesions 20% Feed conversion 2.88

This Control Pen received no blackhead preventive product
Results at the end of the test period
Mortality due to blackhead 60% % severe liver lesions 60%
% severe cecal lesions 80% Feed conversion 4.18

This pen received CARB-O-SEP.
Results at the end of the test period
Mortality due to blackhead 0 % severe liver lesions 0
% severe cecal lesions 0 Feed conversion 2.15

—Abstracted From Test C-158

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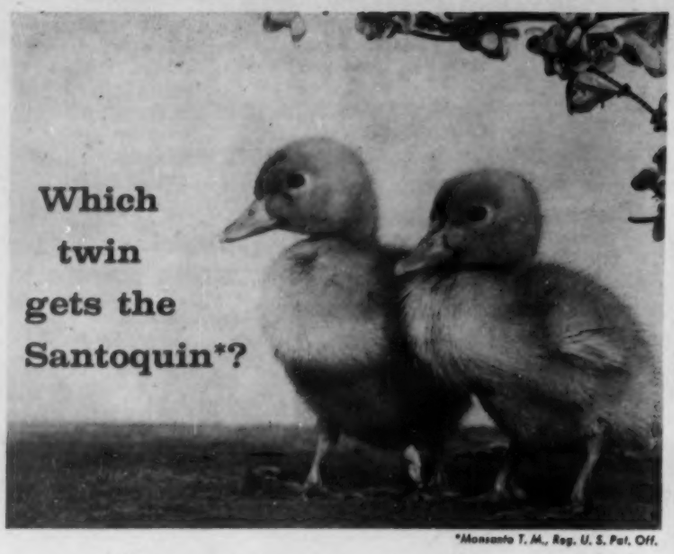

*Monsanto T. M., Reg. U. S. Pat. Off.

They both do . . . and every bird should. See why on page 113.

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Patent #2875709 — March 3rd, 1959

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Convention Calendar

May 10-12 — National Cottonseed Products Assn.; Mark Hopkins and Fairmont Hotels, San Francisco; sec., John F. Moloney, 43 N. Cleveland St., Memphis, Tenn.

May 11-13—American Feed Manufacturers Assn. Convention and National Feed Industry Show; Conrad Hilton Hotel, Chicago; sec., W. T. Diamond, 53 W. Jackson Blvd., Chicago 4, Ill.

May 15-16—Missouri Grain, Feed & Seed Assn.; Hotel Governor, Jefferson City, Mo.; sec., D. A. Meinershagen, Higginsville, Mo.

May 18-19—Beef Cattle & Swine Field Days; Oregon State College, Corvallis; W. Dean Frischknecht, Animal Husbandry Specialist.

May 25—Des Moines Feed & Grain Club Field Day; Des Moines Golf and Country Club; ticket chairman, Curtis Twedt, Spencer, Kellogg & Sons, Inc., 119 S.E. 3rd, Des Moines, Iowa.

May 27-28—North Carolina Poultry Field Day; North Carolina State College, Raleigh; chm., Dr. E. W. Glazener, Poultry Department.

June 1-2—Central Retail Feed Assn.; Hotel Schroeder, Milwaukee; sec., Eldon H. Roesler, 1712 W. St. Paul Ave., Milwaukee, Wis.

June 7-9—Indiana Grain & Feed Dealers Association; Sheraton Hotel, French Lick, Ind.; sec., Fred Sale, 600 Board of Trade Bldg., Indianapolis, Ind.

June 7-9 — Eastern Federation of Feed Merchants, Pocano Manor Inn, Pocano Manor, Pa.; sec., Austin W. Carpenter, Sherburne, N.Y.

June 8-10—Alabama Poultry Industry Assn.; Municipal Auditorium, Birmingham; exec. sec., W. L. Walsh, P.O. Box 567, Montgomery, Ala.

June 8-12—Feed Microscopy Short Course; Missouri College of Agriculture, Columbia, Mo.; sponsored by Missouri College of Agriculture and Missouri State Department of Agriculture; chm., G. M. Barnhart, chief chemist, State Department of Agriculture, Jefferson City, Mo.

June 9—Northeastern Poultry Producers Council Egg Quality and Grading School; University of Massachusetts, Amherst; mgr., Dr. Alfred Van Wagenen, 10 Rutgers Place, Trenton 8, N.J.

June 9-10—Association of Southern Feed and Fertilizer Control Officials; Velda Rose Motel, Hot Springs, Ark.; sec., Maurice B. Rowe, Virginia Dept. of Agriculture, 1123 State Office Bldg., Richmond, Va.

June 25-27—Delmarva Chicken Festival, Dover, Del.; Dave Green, 1102 S. State St., Dover, Del.

June 25-27—Canadian Feed Manufacturers Assn.; Bigwin Inn, Lake of Bays, Ontario; N. D. Hogg, Box 66, Station Q, Toronto, Ont.

June 25-27 — Delmarva Chicken Festival; Dover, Delaware; sec., J. Frank Gordy, Delmarva Poultry Industry, Inc., R.F.D. No. 2, Box 47, Georgetown, Del.

July 7-8—Poultrymen's Get-Together, Cornell University, Ithaca, N.Y.

July 10-14—Georgia Feed Assn.; General Oglethorpe Hotel, Savannah, Ga.; sec., Will L. Kinard, 3240 Peachtree Rd. Bldg., Atlanta 5, Ga.

July 21-23—American Poultry Congress and Exposition; Kiel Auditorium, St. Louis, Mo.; exec. sec., Don M. Turnbull, American Poultry and Hatchery Federation, 521 E. 63rd St., Kansas City 10, Mo.

Aug. 3-8—Feed Microscopy Short Course; Missouri College of Agriculture, Columbia, Mo.; sponsored by Missouri College of Agriculture and Missouri State Department of Agriculture; chm., G. M. Barnhart, chief chemist, State Department of Agriculture, Jefferson City, Mo.

Aug. 4-5—Midsouth Soybean and Grain Shippers Assn.; Hotel Peabody, Memphis, Tenn.; sec., Paul C. Hughes, P.O. Box 692, Blytheville, Ark.

Aug. 24-27—Georgia Poultry Institute; Rock Eagle 4-H Club Center; Eatonton, Ga.; chm., Arthur Gannon, Poultry Division, University of Georgia, College of Agriculture, Athens, Ga.

Sept. 26—Small Mill Short Course; Continental Hotel, Kansas City; sec., Lloyd Larson, 20 W. 9th Street Bldg., Kansas City 5, Mo.

Oct. 11-14—Kentucky Poultry Federation and Kentucky Poultry Improvement Assn.; Cumberland Falls State Park, Corbin; sec., John W. Tuttle, 730 Rose St., Lexington, Ky.

Nov. 30-Dec. 1—Midwest Veterinary Nutrition Conference; President Hotel, Kansas City; sec., Lloyd Larson, Midwest Feed Manufacturers Assn., 20 W. 9th Street Bldg., Kansas City 5, Mo.

New Listings

For the convenience of readers who scan the Convention Calendar regularly for new listings, those added to the column in the current week appear separately from ones which have been entered previously. The following week they will be moved to their proper slot where they will remain until the event is held.

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July 17-18—New Mexico Grain & Feed Dealers Assn.; Castaneda Hotel, Las Vegas, N.M.; sec., Parley Jensen, P.O. Box 616, Albuquerque, N.M.

CALENDAR FOR 1959-60

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Course; Texas Agricultural Experiment Station, College Station; chm., E. E. Brown, Asst. State Chemist.

Aug. 4-7 — Poultry Science Assn. (meeting for members and executive committee invited guests only), Iowa State College, Ames; chm., Dr. Robert E. Phillips, poultry department, Iowa State College.

August 7-8—North Carolina Feed Manufacturers Assn.; Ocean Forest Hotel, Myrtle Beach, S.C.; sec.-treas., A. M. Upshaw, Jr., North Carolina Feed Manufacturers Assn., Box 44, Mocksville, N.C.

Aug. 10-12—American Soybean Assn. and National Soybean Processors Assn., joint convention; Sheraton-Jefferson Hotel, St. Louis, Mo.; exec. vice president, George M. Strayer, American Soybean Assn., Hudson, Iowa; sec., National Soybean Processors Assn., R. G. Houghtlin, 3818 Board of Trade Bldg., Chicago 4, Ill.

Aug. 11-12 — Wisconsin Nutrition School; Memorial Union, University of Wisconsin, Madison; chm., Dr. Robert H. Grummer, Dept. of Animal Husbandry, University of Wisconsin.

Aug. 17-18—Kentucky Feed Conference, sponsored by University of Kentucky and Kentucky Feed & Grain Assn.; Brown Suburban Hotel, Louisville; sec., Jack Weber, P.O. Box 425, Lexington, Ky.

Aug. 23-25—Poultry Industries of Louisiana, Inc.; Captain Shreve and Washington Youree Hotels, Shreveport; sec., Clyde Ingram, Louisiana State University, Baton Rouge, La.

Aug. 23-25 — The National Hay Assn.; Sir Francis Drake Hotel, San Francisco; sec., Fred K. Sale, 600 Board of Trade Bldg., Indianapolis, Ind.

Sept. 9-10 — Pet Food Institute, Drake Hotel, Chicago; sec., Clyde Kassens, 3325 Michigan Ave., Chicago, Ill.

Sept. 9-10 — Maryland Poultry Service Conference; University of Maryland, College Park; chm., Wade H. Rice, University of Maryland, College Park, Md.

Sept. 13-14—Grain and Feed Dealers National Assn. (work meeting for directors, committees and members), Minneapolis; exec. vice pres., Alvin E. Oliver, 400 Folger Bldg., Washington 5, D.C.

Sept. 16-18—National Feed Ingredients Assn.; Pick-Congress Hotel, Chicago, Ill.; sec., Peter W. Janss, 212 Equitable Bldg., Des Moines, Iowa.

Sept. 17-18 — Arkansas Formula Feed Conference; University of Arkansas, Fayetteville; chm., Dr. E. L. Stephenson, Department of Animal Industry.

Sept. 18—College - Feed Industry Conference; Iowa State College, Ames; chm., Prof. Emmit Haynes, Animal Husbandry Dept.

Sept. 23 — Vermont Feed Dealers and Manufacturers Assn.; University of Vermont, Burlington, Vt.; sec., D. C. Henderson, Hills Agricultural Science Building, Burlington, Vt.

Sept. 23-25 — Feed Production School; Continental Hotel, Kansas City; Lloyd Larson, 20 W. 9th St. Bldg., Kansas City, Mo.

Oct. 6-8 — Northeastern Poultry Producers Exposition; Farm Show Building, Harrisburg, Pa.; sec., Dr. Alfred Van Wagenen, 10 Rutgers Place, Trenton 8, N.J.

Oct. 7-9—Texas Nutrition Conference; Texas A&M College, College Station; chm., Dr. J. R. Couch, Department of Poultry Science.

Oct. 14 — Animal Nutrition Research Council; Shoreham Hotel, Washington, D.C.; sec., Irwin Olcott, Dawe's Laboratories, Inc., 4800 S. Richmond St., Chicago 32, Ill.

Oct. 14-15—Association of American Feed Control Officials; Shoreham Hotel, Washington, D.C.; sec., Bruce Poundstone, Agricultural Experiment Station Bldg., University of Kentucky, Lexington, Ky.

Oct. 20-21—Virginia State Poultry Federation; Hotel John Marshall, Richmond, Va.; sec., J. Paul Williams, 615 E. Franklin St., Richmond 19, Va.

Oct. 22-23 — Annual Stockholders Meeting, Cooperative G.L.F. Exchange, Inc., Onondago County War Memorial Building, Syracuse, N.Y.

Oct. 23-24—Oklahoma Formula Feed Conference; Oklahoma State University, Stillwater; chm., Dr. Rollin H. Thayer, Poultry Science Department.

Oct. 30—Illinois Sheep Producers Day; University of Illinois, Urbana; chm., Dr. U. S. Garrigus, Department of Animal Science.

Nov. 4-7 — National Renderers Assn., Hollywood Beach Hotel, Hollywood Beach, Fla.; sec., Miss Jamie Fox, 30 N. La Salle St., Chicago 2, Illinois.

Nov. 12-13—Cornell Nutrition Conference; Hotel Statler, Buffalo, N.Y.; chm., Dr. F. W. Hill, Poultry Husbandry Dept., Cornell University, Ithaca, N.Y.

Nov. 17-18—Arizona Grain & Seed Association; Hotel Westward Ho, Phoenix; sec., Hayden C. Hayden, Hayden Flour Mills, Box 156, Tempie, Ariz.

Dec. 8-9—Poultrymen's Service Clinic; Cornell University, Ithaca, N.Y.

1960

Jan. 4-5 — Kansas Formula Feed

Schenley Distillers, Inc.

Salutes the Members of the

American Feed Manufacturers Association

Why does a chicken cross the road?

Naturally to get its Mixed Feed and naturally it is mixed with SOLUDRI, SCHENLEY'S DISTILLERS DRIED SOLUBLES * the popular protein supplement for chickens. It is low in moisture and fibre and high in fat and energy.

Another fine product of Schenley's Farm Feed Division: SCHENLEY CORN DISTILLERS DRIED GRAINS * They are especially valuable in feeds for dairy cows to raise milk production when used with low fat ingredients.

All Schenley Products are always fairly and realistically priced. Write or wire today.

*with GPF: Grain Fermentation Factor.

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Schenley Distillers Inc.

FARM FEED DIVISION

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Cincinnati 2, Ohio
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Conference; Kansas State University, Manhattan, Kansas.

Jan. 25-27 — Southeastern Poultry & Egg Assn.; Municipal Auditorium, Atlanta, Ga.; sec., Harold E. Ford, 235 E. Ponce de Leon Ave., Decatur, Ga.

Feb. 4-5—Oregon Animal Industry Conference; Oregon State College, Corvallis, Ore.; chm., Dr. J. E. Parker, Poultry Husbandry Department.

Feb. 12-14—Fact Finding Conference, sponsored by the Institute of American Poultry Industries; Municipal Auditorium, Kansas City, Mo.; pres., Harold M. Williams, 59 East Madison, Chicago, Ill.

Feb. 21-23—Ohio Grain & Feed Dealers Assn.; Commodore Perry Hotel, Toledo; sec., G. E. O'Brien, 694 N. Ohio Street, Greenville, Ohio.

Feb. 22-23—Virginia Feed & Nutrition Conference; Hotel Roanoke, Roanoke; J. Paul Williams, sec., Virginia State Feed Assn., 615 E. Franklin St., Richmond, Va., or Prof. Paul M. Reaves, Department of Dairy Science, Virginia Polytechnic Institute, Blacksburg, Va.

March 7-8—Grain & Feed Dealers National Assn.; Hotel Muehlebach, Kansas City; sec., Herbert L. Sharp, 400 Folger Bldg., Washington 5, D.C.

March 23—Distillers Feed Conference; Sheraton Gibson Hotel, Cincinnati; sponsored by Distillers Feed Research Council; exec. director, Dr. Lawrence E. Carpenter, 1232 Enquirer Bldg., Cincinnati, Ohio.

G. F. Siemers Dies

UPPER MONTCLAIR, N.J.—Gustav F. Siemers, technical director of the vitamin division of Hoffmann-La Roche, Inc., Nutley, N.J., died April 12 in Community Hospital here. He had been a resident of Montclair since 1942.

Mr. Siemers joined Hoffmann-La Roche in October, 1940, as technical director of the vitamin division, which had been founded early in 1939 when Roche was becoming a bulk producer of vitamins B_1, B_2 and C.

Corn Belt Bankers Shown How Feeding Methods Have Changed

LEIGHTON, IOWA — Rural community bankers from eastern Iowa, southern Minnesota and northeastern Missouri were special guests of Brummel Bros. feed firm here recently in a field day sponsored by Ralston Purina Co., St. Louis.

An estimated 150 bankers, feed dealers and company representatives attended the field day. The day's events included a dinner, a tour of the Brummel Bros. mill and a visit to two farms near here.

Purpose of the farm visits was to acquaint the guest bankers with the broad changes that have come in farming methods, particularly in respect to size of operation, livestock feeding facilities and methods and farm accounting and management.

Also pointed out were the close relations between the feed company's dealers and the farmers in carrying out successful feeding operations.

Two similar events are planned for other Iowa points, and other field days will be held in other Corn Belt states, according to Fred McLimore, St. Louis, Ralston Purina's merchandising manager for the grain belt region.

Test Compares Ways To Feed Veal Calves

TORONTO, ONTARIO—Calves fed skim-milk supplemented with concentrate and hay made the biggest profits in a test at the Ontario Agricultural College to compare eight feeding systems for growing out veal calves, the Ontario Department of Agriculture reports.

The treatments tested included whole milk, pail fed; whole milk fed for three weeks, then re-constituted skim milk; milk replacer and nurse cows. These four treatments were tested with and without supplements to make the full eight systems.

Other findings were reported as follows: Calves on nurse cows made the fastest daily gains (2.44 lb.); calves on milk replacer made the slowest gains; average gain for all treatments was 1.7 lb. per day; hay and concentrate supplements increased the daily gain of milk replacer and skim-milk calves the most; nursed calves had the highest dressing percentage (60%); average dressing percentage for all other calves was 54.2%, and market prices were highest for the whole milk-fed calves ($22.72 cwt. liveweight).

Norris Executive Resigns Position

TOLEDO — Paul Atkinson, vice president and general manager of the Norris Grain Co. for the past 19 years, has announced his resignation—effective June 1. Mr. Atkinson said he will continue in the grain trade, but added that he is not ready to report his future plans.

Before coming to Toledo to take charge of operations for the Norris interests, Mr. Atkinson was connected with the same firm in its New York export office. He has been active in the Toledo Board of Trade and, in addition to serving on its board of directors, has held the office of president and has been chairman of several committees.

Joseph R. Schaber will take over management of the Norris operations. For the past 10 years, he has been in charge of the Peoria office for the company, where he has been active in the grain business and was president of the Peoria Board of Trade in 1956.

Pfizer Sales Up; Stock Split Approved

NEW YORK — First-quarter sales of Chas. Pfizer & Co., Inc., were the highest in the firm's history, but earnings were slightly lower than in the same period in 1958, John E. McKeen, president, reported at the firm's annual meeting April 20.

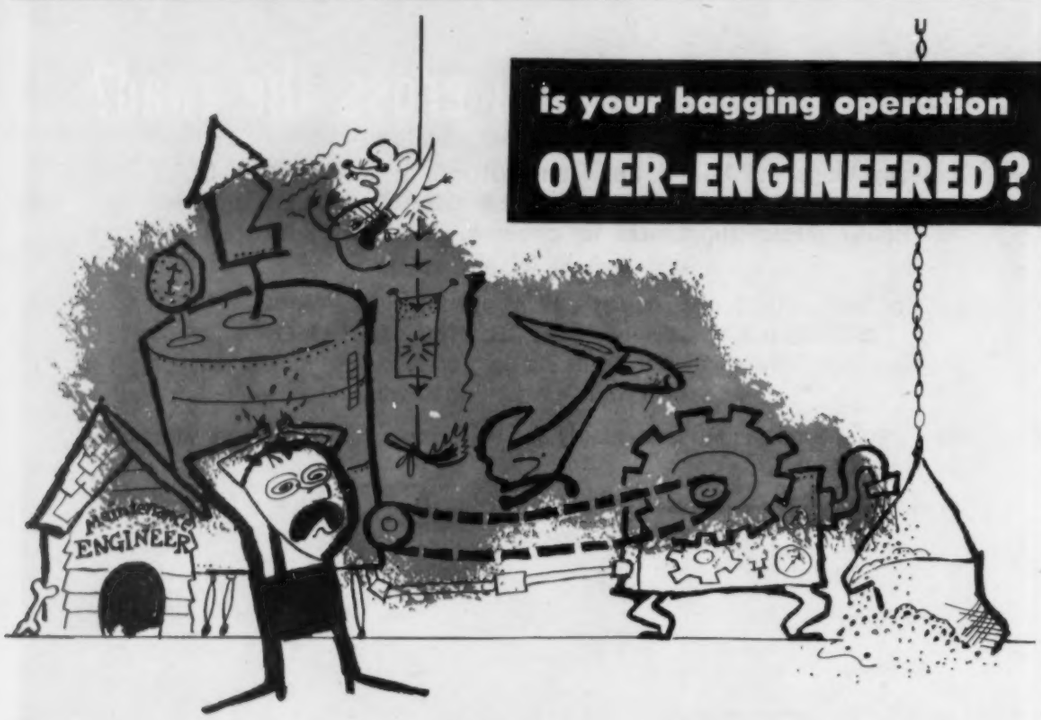
World-wide sales of the pharmaceutical and chemical company were $60,547,000 in the first three months, 12½% above the $53,779,000 in the same period last year.

Net earnings in the opening quarter were $6,339,000, compared with $6,526,000 for the same period in 1958.

At the meeting, share owners approved a three-for-one split of the common stock which will be effected May 15 through the distribution of two shares for each one held. The company's 13 directors were re-elected.

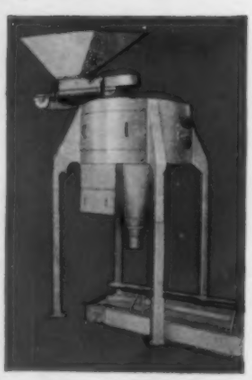
MOBILE MILL FIRM

ARMOUR, S.D.—A new feed business known as Morrows Mobile Milling Co. has opened here. The firm has purchased a Champion 2½ ton portable grinder and mixer.



You need the new SOUTHLAND PACKER!

- **IT'S VERSATILE!** This one compact unit handles the entire range of feed products (except those of high molasses content).
- **IT'S SIMPLE!** Just one scale system, not two or three—fewer moving parts and wear points.
- **QUICK CHANGE-OVER!** A single, simple adjustment changes from 25-lb. to 50-lb. to 100-lb. bags . . . in merely a matter of minutes.
- **HIGH PRODUCTION!** Up to twenty 25-lb. or 50-lb. bags per minute, or twelve or more 100-lb. bags, with accurate weight.
- **DURABLE, RUGGED!** Heavier, more rigid construction—generous use of stainless steel and non-corroding nylon bushings.



The SOUTHLAND costs less, *saves more* . . . less spillage and dusting; minimum headroom and floor space; simple installation and maintenance. Enthusiastic users say it's "tops" in dependability.

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SEND COUPON TODAY
DISTRIBUTED EXCLUSIVELY BY
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Packaging Specialists for over 100 years

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Please send me free complete information on the new SOUTHLAND PACKER.

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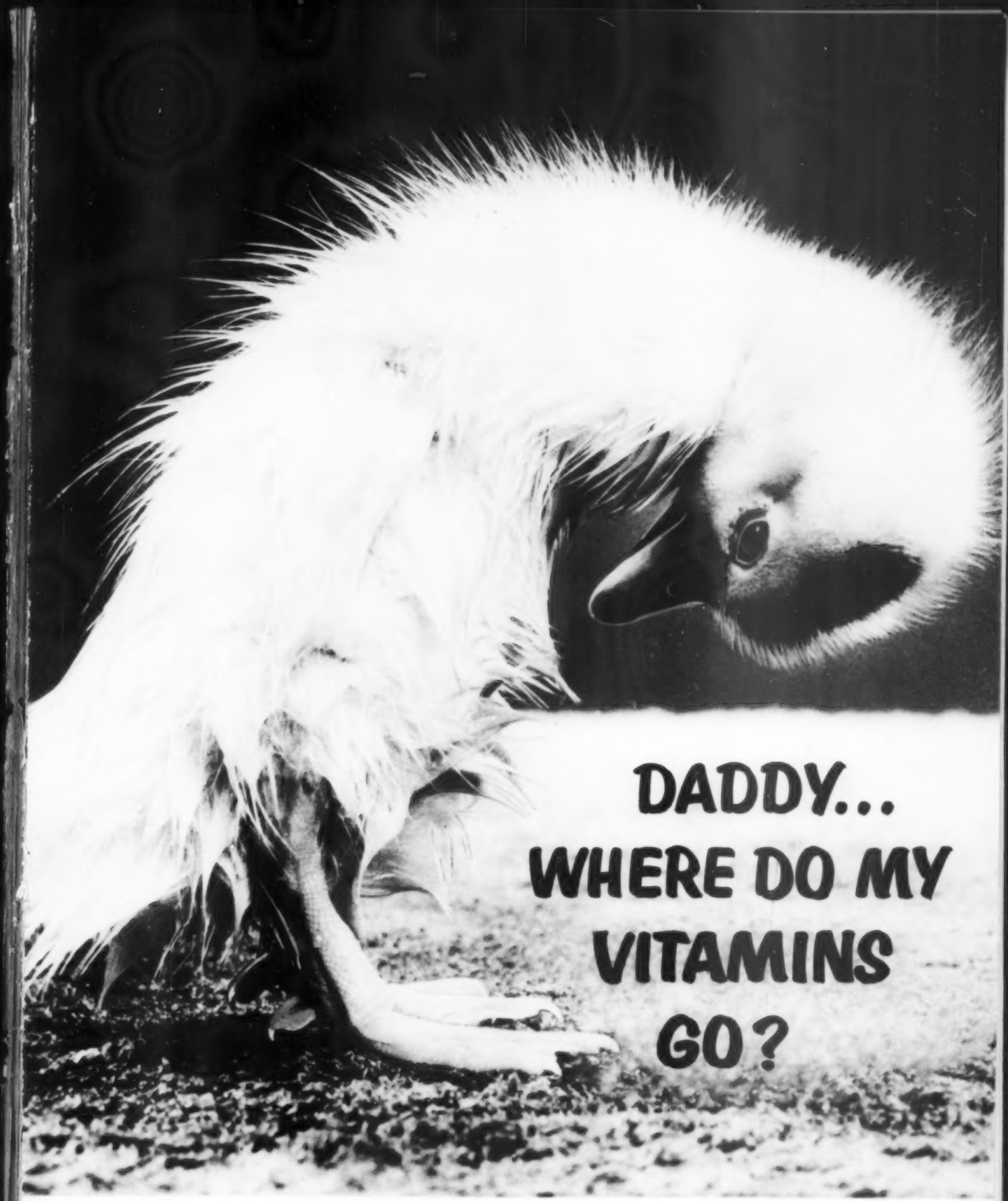


Lost, Honey-Chile...wasted away by oxidation,

but Monsanto has found the answer...

Santoquin®

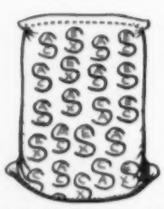
FOOD VALUE GUARD

The happiest discovery

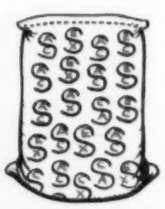
To put it in an egg shell:

WITH Santoquin ...just ¼ lb. per ton:

Many feed producers can add less vitamin A supplement and eliminate vitamin E supplement because...



SANTOQUIN halts oxidation from destroying vitamins in natural feedstuffs and costly supplements...



Keeps nutrient values high, no matter how finely ground the feed, how hot the weather.

In the bird, Santoquin does what no other antioxidant can do...

preserves nutrients in the digestive tract during and after feeding...

continues this protection through digestion and metabolism...

birds can "store" and utilize virtually all the nutrient values you put in the feed.

WITHOUT Santoquin

Most feed manufacturers added excessive amounts of supplementary vitamin A, often added additional vitamin E.

Oxidation wasted away most of these valuable nutrients because of the large exposed surface area of the mixed feed.

Often, before the feed was used, a major portion of the vitamins and pigment-forming nutrients were lost, destroyed by oxidation.

Oxidation loss is even faster in the body of the bird

Peroxides form in the bird's body, speed up oxidation.

Vital nutrients and color formers are lost, chemically "changed."

No other antioxidant can halt these losses in the body.

chemistry has ever made for the feed industry

Santoquin HALTS LOSS OF VITAMIN A, VITAMIN E, carotenes and pigment-forming xanthophylls in the mixed feed and in the body of bird

SANTOQUIN insures that even if you put *less* of these nutrients in the feed mix, the birds' bodies will get more.

Without SANTOQUIN, even though birds may eat more, they get less nourishment.

Santoquin guards against even traces of rancidity in the highest fat content diets. Feeds stay more palatable, even in long storage and hot weather.

Santoquin in feeds saves pigment-forming xanthophylls. Makes healthier, brighter shanks and flesh, yellower egg yolks.

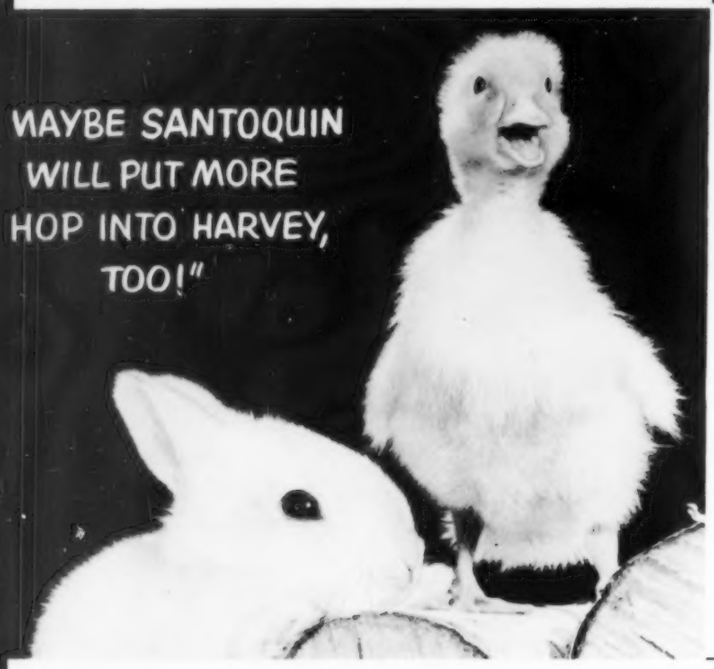
Santoquin protects flocks against vitamin deficiency diseases,* actually acts in the birds like vitamin E.

**encephalomalacia, exudative diathesis, muscular degeneration.*

Santoquin is the most powerful, vitamin-protecting, and profit-promising antioxidant ever developed for the feed maker!

* * *

Leading forage dehydrators are adding SANTOQUIN to protect the carotenes, xanthophylls and other vital nutrients in alfalfa meal. Ask your regular supplier how SANTOQUIN makes dehydrated alfalfa more valuable to you. Take a tip from his experience and find out how you can profit from adding SANTOQUIN directly to your feed.



Santoquin is cleared by the Food and Drug Administration for all types of poultry feed. Approval for other types of feed is under investigation. For information on possible applications to other types of prepared feeds, write to Monsanto describing your interests.

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Please indicate:
I am now ☐, I am not now ☐ using any antioxidant in my feeds.

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Company _____

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You'll want complete information immediately on how SANTOQUIN will help your feeds provide the most food value by *saving*—from mixing to metabolism—the nutrients formerly lost to oxidation. You may be able to cut costs of vitamin supplementation, you certainly will insure "freshness," palatability, and maximum feed response from your diet formulation.

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Talks on Prices, Feedlot Efficiency Given at Nebraska

LINCOLN, NEB. — Factors which determine beef cattle prices, possible ways to increase the efficiency of feedlot cattle and studies of consumer preferences for beef cuts and grades were discussed here at the 47th annual University of Nebraska Feeders Day. (Earlier story on cattle feeding research reports, Feedstuffs, May 2.)

Speakers were Dr. P. H. Stephens, research director, Farm Credit District, Wichita, Kansas; Dr. R. M. Koch, associate professor of animal husbandry, University of Nebraska; V. H. Arthaud, also of the Nebraska department of animal husbandry, and Dr. V. James Rhodes, assistant professor of agricultural economics, University of Missouri.

BEEF CATTLE PRICES—"It's the beef on the hooks in packing houses, not the cattle in the country, that is the prime determining factor in beef cattle prices," declared Dr. Stephens, a livestock economist.

"Due to the larger number of cattle on feed and, eventually, larger market supplies, fat cattle prices will not follow the steep upward trend that we experienced a year ago in the winter and early spring months," he said. "In fact, further weakness rather than strength should be anticipated until cattle presently on feed are marketed. However, it is entirely possible that the longer-time fed cattle outlook is still favorable."

Dr. Stephens stated that more fat cattle being marketed early this year indicates smaller market supplies could be available during the last half of the year.

FEEDLOT EFFICIENCY—A 1% increase in the calf crop from Nebraska's beef cows could boost profits $2 million, according to Dr. Koch. "It is not at all unreasonable to think that we can improve the average calf crop in Nebraska by 4-5% and get them in a shorter time resulting in a more uniform set of calves," he said.

"Many people, including myself, have expressed concern over the possibility that by increasing growth rate in our cattle we will lose the ability of our cattle to finish at the more acceptable light weights. Judging from the facts to date, this need not be so. We can select cattle that grow rapidly, gain efficiently and will reach the required degree of finish at light weights."

To meet the needs of these cattle, systems of production may have to be changed, he said. "We will undoubtedly start the cattle on feed at younger ages than in the past. Since younger cattle make gains more efficiently, we should further increase our efficiency of gains."

Dr. Koch said another possibility of increasing efficiency of feedlot cattle is through hybrid vigor.

CONSUMER PREFERENCE—Dr. Rhodes commented that although "choice" grade beef makes up one half of the beef sold retail today, eating quality tests indicate that "good" grade beef may someday challenge the popularity of "choice."

"There is a fortune waiting for the merchandiser who can devise a way of sorting out the two of every three 'good' animals which now have 'choice' eating quality," he said.

Outside finish, according to Dr. Rhodes, apparently has very little relationship to eating quality "and the grading service has, quite correctly, begun to de-emphasize it." He stated that the small rind "choice" carcasses reportedly yield about 4% more salable meat after trimming than the highly finished "choice" carcasses of the same weight.

"These yield figures mean that the leaner 'choice' animals already are actually worth more to retailers than the highly finished 'choice' animals," he said.

Mr. Arthaud reported that a study conducted in 10 Lincoln retail stores indicated that shoppers there like their steak lean, tender, juicy and flavorful without too much fat or bone. Study results showed that when outside fat is less than half an inch the steaks are acceptable at most stores.

It was found that consumers seem to like larger steaks and look for a happy medium in the amount of marbling or fat distributed through the lean of a steak.

Memphis Club Told Of Forage Pelleting

MEMPHIS, TENN.—Dr. Peter G. Hogg, assistant superintendent, Mississippi Agricultural Experiment Station, Stoneville, recently told members of the Memphis Agricultural Club that research has indicated that pelleting of improved forage grasses could produce a yield of a ton of beef for each acre of grass.

He said pre-harvest clipping of forage grass such as the coastal Bermuda strain, for pelleting is "ideal for soils unsuited to cotton growing."

NEW GRAIN TERMINAL

FARGO, N.D. — Construction has begun on a million-bushel, $400,000 grain terminal here operating under the name of D&P Terminal, Inc. The owners are L. H. DeWall, Watertown, S.D.; C. A. Potter, Redwood Falls, Minn., and J. G. Potter, Rapid City, S.D.

NEW CALF-PAB SALES AIDS!

1 NEW DISPLAYS SHOW HOW TO LOWER FEED COSTS!

2 NEW SUSPENSION TEST SHOWS CALVES GET FULL NUTRITIVE VALUES!

3 NEW 1-DAY FREE FEEDING SAMPLE WINS NEW SALES!

WRITE TODAY! FOR SAMPLES AND NEW CALF-PAB SALES AIDS!

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Bulk Scale Speeds Handling

You find your handling costs going down right away when you use the new Burrows 1200 Bulk Scale. You eliminate costly delays at floor scales and hoppers, you can weigh all kinds of grain and feed "on the move." This saves labor costs and increases the efficiency of your operation.

The scale is specially designed for speedy operation. Brake, scale beam, dump handle and pushing handle are grouped within easy reach of the operator. Rubber wheels and roller bearing casters make full-load handling fast and easy. The sharply sloping bin and the 8" x 14" dump gate assure you of immediate and complete gravity discharge.

The built-in Fairbanks Morse scale weighs down to the ounce—gives you accurate readings every time.

Why not start to save on handling costs this week? **Phone collect** to order your Burrows 1200 Bulk Scale.

A COMPLETE LINE FOR YOU

The items shown in this ad are just a few of hundreds of pieces of equipment for testing and handling grain, feed or seed available to you at Burrows.

Your Burrows service man is waiting for your letter or call, ready to ship that needed piece of equipment today.

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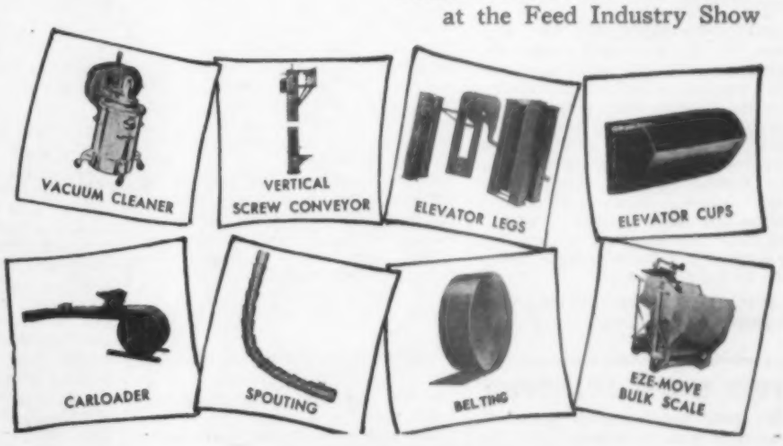

BURROWS

BURROWS EQUIPMENT COMPANY
1316C Sherman Avenue Evanston, Illinois

National Feed Show Directory

Your Guide to the Biggest Feed Equipment, Products and Services Exhibit in the Nation

ABBOTT LABORATORIES, INC., North Chicago — This exhibit will center around Pro-Gen and Klotogen F. The three-booth display will be attended by R. W. Nichols, J. J. Brennan, R. G. Morton, B. H. McBride, R. V. Mann, J. A. McDearmit, R. J. Balsley, K. Penwell, J. B. Verlenden, F. S. Lakey, R. E. Ruan, Dr. D. V. Frost, and Dr. H. S. Perdue.

AEROGLIDE CORP., Raleigh, N.C.—There will be a scale model of the Aeroglide drier, along with enlarged photographs of various installations; color slides telling the complete story of the Aeroglide operating principles, and the introduction of the Grain Bank Series. This series is a new line of driers which vary in size from 250 bu. through 575 bu. in capacity. In charge of the booth will be Gene Bohlke, midwestern sales representative for Aeroglide. Assisting him will be Hank Frazier, Koka Booth, Clyde Nelson and Dick Sprague.

ALLIED CHEMICAL CORP., Nitrogen Division, New York—This exhibit is planned essentially around the firm's Procadian urea feed mixture. Tom Friese, Keith Udine, Vince Janes, Bob Lyons, Bill Hill, Ken Evans and G. C. Matthiesen will staff the booth.

ALLIED INDUSTRIES, Waupaca, Wis.—The Allied grain buggy, vertical screw conveyor, bag trucks and other mill equipment will be shown. Ned Murray and Tom Murray will be at the booth.

AMERICAN CYANAMID, New York—An unusual red barn display built around antibiotic and medicated feed supplements is planned. Frank Noel is in charge of the exhibit. The company is also planning a cocktail party May 11 at 5 p.m. in the Conrad Hilton Wilford Room. The party will be a "calypso style" affair.

JOHN ANDREWS, Illustrator, Omaha—John Andrews, livestock and poultry artist, will have a special showing of his newest drawings of farm animals at the feed show. Mr. Andrews plans to introduce a special monthly clip art service of livestock and poultry drawings for use in farm advertising. Assisting Mr. Andrews in the booth will be his wife, his business manager, Bill Russell, and Mr. Russell's wife.

ANDREWS MACHINE CO., Decatur, Ill.—The booth will include the newest in bulk feed handling equipment for dealers and manufacturers. The line includes seven different setups for unloading bulk cars, all designed to unload bulk ingredients or feed from covered hopper or box cars into storage bins or directly into trucks. Layouts of all seven set-ups will be displayed. James L. Fletcher and L. D. Glover, both of Andrews Machine, will be in attendance, along with model Jan Peters.

APPRAISAL SERVICE CO., Minneapolis—The company will display advertising material and sample reports of appraisals of property. Attending the booth will be Robert A. Hentges and Stewart W. Elder.

ARCHER - DANIELS - MIDLAND, Minneapolis—One third of the three-booth area will be devoted to a display of ADM feed ingredients, shown in about 50 giant plastic "test tubes" 6 ft. high and mounted against a translucent plastic background. Transparencies also will show feed mills and equipment constructed by ADM's equipment department. The entire display will be surmounted by a large red Archer cap. The other two thirds of the ADM space will be devoted to the "Pooped People's Parlor," described by the company as a "refuge for weary convention goers." Ed Paschke, soybean oil meal sales manager, is in charge.

ARMOUR & CO., Chicago—E. J. Hennessy and others from the Armour staff will be on hand to answer questions about exhibited Armour products for the feed industry.

BARNARD & LEAS, Cedar Rapids, Iowa—On display in the three-booth exhibit will be a Barnard & Leas mobile formula feed mill, including the new dual unloading system—air unloading as well as hydraulically-powered-and-positioned auger discharge. Other process equipment will include operational controls of B & L's "complete neutral solution" liquid fertilizer plants. Among those present will be Walter C. Ronk, vice president; E. J. Whisler, vice president in charge of sales; W. R. Stephens, head of the chemical division; Harvey White, mobile division manager; Richard E. Miller, district sales manager, and Dean Terwilliger.

C. O. BARTLETT & SNOW CO., Cleveland — Several new items of equipment will be shown: The Triumph No. 900 corn sheller, capacity of 40-50 tons of machine picked ear corn per hour; Triumph No. 17x2 double roll type ear corn crusher; the new base for the No. 900 sheller; and the Triumph 16-in. diameter pit screw feeder. All of the new equipment will be assembled in operating position. Also to be displayed will be a new collector for cobs and shucks 5 ft. in diameter and only 5 ft. high. Attending the booth will be Ed McCreery, manager of the Triumph division; Joe Payton, applications engineer; Mike Arms, product engineer; Chuck Shalala, sales promotion manager, and Norm Kidd, standard products sales manager.

BEMIS BRO. BAG CO., Minneapolis—The Bemis Fastr-Weigh Bagger, designed to handle crumbled, pelleted, cubed and other type of material, will be on display. This bagger is capable of weighing and filling 22 50-lb. or 16 100-lb. open mouth paper or textile bags per minute with a weight accuracy within 2 oz., Bemis reports. The bagger is equipped with continuous or operator-controlled cycling. Bemis representatives Marshall C. Barnes and R. W. (Mike) Michalowski will be at the booth to demonstrate and answer specific questions on the Fastr-Weigh Bagger.

PAUL O. BERG, PROFESSIONAL ENGINEER, Ft. Wayne, Ind.—Feed mill engineering services offered by Paul Berg, professional engineer, will be displayed by pictures showing actual installations and an actual scale model of a small feed mill. Technical data on feed mill operations will be available. In addition to Mr. Berg, members of his staff—Vernon Reed, William Davenport and Don Petry—will be on hand to discuss feed mill installations.

BIOCHEMICAL CORP. OF AMERICA, Salem, Va.—Most of the space will be devoted to Silo-Zyme silage culture concentrate, a biochemical activator which accelerates the natural biochemical processes to produce and protect silage. It is designed to inhibit development of undesirable organisms which tend to cause spoilage and foul odors. There will be information on Rucin, Diatane and other enzyme products for feeds. Representing the firm will be H. Thomas Martin, executive vice president; Harold E. Kistner, Jr., sales manager of the agricultural products division, and Robert Munn, sales representative of the agricultural division.

THE BORDEN CO., New York—Samples of the firm's feed supplement products will be shown, and there will also be a live TV system set up so booth visitors can see themselves "in the Borden picture." Attending the booth will be Richard G. Sanders, E. J. Brubaker, L. D. Christian, Quentin Harvell, Ralph P. Steves, W. P. Brown, Jerry Gentsch, Jim Kennedy, Irye Hoyt, Bill Shearer, Karl Winter, Bob Stewart, Bill Schorer, Harold Warthoe, Don Smith, Bob Wisdom and W. J. Monson.

BREWERS YEAST COUNCIL, INC., Chicago—The display has been planned to illustrate information on the use of brewers yeast in feeds. Miss Elsie Singruen, Frank Allen and Frank Adamski will attend the booth.

BURROWS EQUIPMENT CO., Evanston, Ill.—A total of five booths of exhibits will include Burrows bolted steel storage tanks, bulk feed bins, augers, sewing machines, bag conveyors, elevator legs, distributors and the Weigh-Burro bulk scale. An entirely new item will be the Burrows automatic portable molasses mixer. The Burrows delegation of 10 salesmen will be headed by Parke W. Burrows, president; C. J. Polstra, vice president; John W. Wastcoat, general manager, all "ably" assisted by "Miss BECO of 1959."

BUTLER MANUFACTURING CO., Kansas City—A new internal auger mounted inside the hopper of Bulk-O-Matic tanks will be featured in the exhibit. This auger will permit direct discharge from the hopper of hard-to-flow materials. In addition, Butler's complete line of bulk storage and handling equipment will be on display. Mechanical handling equipment will be shown in photographs illustrating different storage and handling systems. Art Stegner, bulk storage product manager, will be in charge of the exhibit. Other personnel on duty will include Dick Colvin, Jim Stewart, Bob Noller, Charles Gardner and Harry Bolte.

CALIFORNIA PELLET MILL CO., Crawfordsville, Ind. — A new pellet mill model will be on exhibit. The two-speed unit can pellet range-type products at a slow die speed and poultry-type products at a high die speed. The shift in die speed is accomplished by throwing a shift lever which actuates a transmission built into the gearbox. This transmission is a cartridge type, replaced in one or two hours by a second transmission. Thus, two, four or more combinations are available. William G. Trapp, assistant sales manager, is in charge of the exhibit. Also attending will be E. N. Meakin, president; C. N. Hultberg, vice president; Paul J. Husting, assistant general sales manager; Roy Robinson, sales department engineer; John F. Speirs, sales representative, Columbus, Ohio, and Jack L. Mitchell, sales representative, Davenport, Iowa.

CHAMPION PORTABLE MILL CO., Minneapolis—Large photo illustrations of mobile grinding and mixing equipment will be the feature of the exhibit. Special attention will be given to the accessories, which include liquid molasses mixing equipment, mobile corn shelling equipment, bulk concentrate carrying bins and an air conveyor system. A special feature will be the new bulk concentrate carrying bins. Also featured will be the air conveyor which can be mounted in addition to the conventional auger discharge system. Robert P. Olson, general manager, will be in charge.

CHASE BAG CO., New York—Products to be exhibited will include the new Chase Moistite closure for multiwall bags, the Southland Packer for feed, a heavy-gauge polyethylene bag as well as Chase Multiwall paper bags, and bags of burlap, cotton and laminated materials. Custom packaging for unusual formulas will be discussed by technical personnel. In attendance will be H. B. Rue, E. P. Alexander, W. J. Gosney, F. W. Harker, J. G. Russell, Bill Sheets, George White, George Christian and R. H. Ayers.

CHEMO PURO MANUFACTURING CORP., Newark, N.J.—The following products will be exhibited: Ascorbic acid (vitamin C)—for layer feeds to reduce egg breakage, also included in pig prestarter; ethylenediamine dihydroiodide (5% and 100%)—organic salt containing 80% iodine; G. H. A. Compound—for use as a precursor of glycine in glycine-deficient feeds; methylthiouracil — antithyroid agent employed in fattening rations; mineral gluconates; orotic acid (and potassium salt) — thought possibly to be the growth factors of whey, present in distillers' solubles; Pip-Fac (Piperazine premix); saccharin sodium; sodium acetate (anhydrous). P. C. Hereld, executive vice president, in charge.

COLUMBIAN STEEL TANK CO., Kansas City—The display will illustrate typical Columbian Red Top bulk feeding equipment including the "Mix-O-Matic" unit which was shown at the Midwest Feed Production School. The "Mix-O-Matic" mixes, stores and handles formula feeds in bulk. Columbian rigid frame steel buildings for bulk grain storage will also be included. Recently-printed brochures about Columbian "big bins" and "tall tanks" will be available. Dick Parsons and Don Dixon will be at the exhibit.

COMMERCIAL SOLVENTS CORP., New York—Besides a puppet show, the display will include information on CSC antibiotic and vitamin supplements and other feed ingredients. Booth personnel will include: J. V. O'Leary, T. P. DeFarkas, I. H. Cohen, L. Chavex, Jr., Dr. E. F. Grassl, Dr. R. C. Klussendorf, L. N. Bell, N. Stark, L. C. Hastings, J. Recker, J. Scott, W. F. Tait, H. C. Bragdon, R. O. Cox, J. H. B. Marple, F. J. Klatte, L. Schaffel, and L. R. Sanford, Jr.

CROWN IRON WORKS CO., Minneapolis—The display will illustrate equipment for solvent extraction of soybeans. The minimum size unit made by Crown is a 40-ton plant, and this can be built up in multiples of 40 tons. The company also makes a single unit, 200-ton plant designed on the same basis. J. C. Lovetang, sales engineer, and A. J. Kaiser, project engineer, will be at the booth.

DAFFIN MANUFACTURING CO., Lancaster, Pa.—The display will in-

FEED SHOW SCHEDULE

The 1959 National Feed Show will open at 1 p.m. on Sunday, May 10. This will be an "advance look" day and no registration badge will be required for admission. After this preview day, admission will be by American Feed Manufacturers Assn. registration badge only. Other open hours for the show are Monday, May 11, from 11 a.m. to 7 p.m.; Tuesday, May 12, from noon to 6 p.m., and Wednesday, May 13, from noon to 3 p.m.

EDITOR'S NOTE: To help those attending the AFMA convention and National Feed Show in Chicago May 10-13, Feedstuffs asked exhibiting firms to submit brief descriptions of their displays. The descriptions are published on this and following pages.

1957 FEED SHOW—The picture on the right shows a small portion of the equipment that was exhibited at the 1957 National Feed Show. Some 100 firms are expected to have exhibits for this year's show, held in conjunction with the American Feed Manufacturers Assn. convention at the Conrad-Hilton Hotel in Chicago. The exhibits will occupy more than 30,000 sq. ft. of exhibit space in the lower level of the hotel.

clude several new Daffin products—a 75 h.p. model of the Daffin "Western" pelleting machine, a Daffinaire VAC-Conveyor (two-way pneumatic materials handling unit), and several examples of the Daffin "MacLellan" mixer. The current model of the Daffin Feedmobile and the Daffin "packaged" stationary feed processing plant also will be on display. The "Western" pelleting machine will represent a complete line of pellet mills ranging from 25 to 100 h.p. The exhibit will be hosted by I. A. Daffin, president of the firm, and O. A. Petty, II, executive vice president, along with a number of other members of the Daffin firm.

DIAMOND CRYSTAL SALT CO., St. Clair, Mich. — Members of the firm's sales staff will be on hand to discuss Diamond crystal products for the feed trade.

DISTILLATION PRODUCTS INDUSTRIES, Rochester, N.Y. — Color photomicrographic transparencies of PGB-250 dry vitamin A and of Myvamix vitamin E feed supplements are featured in the display of this firm, a division of Eastman Kodak Co. For the more curious, there will be binocular microscopes for a closer look at premixes and feeds in which vitamin supplements have been dispersed. Attending the show will be E. T. Ostermeyer, Dr. S. R. Ames, R. W. Lehman and F. H. Tinkler from Rochester, N.Y. Sales representatives from the field will be J. F. Hanrahan, R. W. Carpenter and C. P. Danehy.

DISTILLERS FEED RESEARCH COUNCIL, Cincinnati, Ohio—This exhibit will show all of the processes used by the distilling industry in converting cereal grains to beverage spirits and feeds. Each visitor will have an opportunity to hear a tape recording describing details of each important process, and to see pictures of the type of equipment used. Dr. L. E. Carpenter, executive director of the Distillers Feed Research Council, will be in charge of the exhibit. He will be assisted by George M. Brinker, president of the council, and Chuck Folzenlogen, sales manager, feed division, Schenley Distillers, Inc.

DODGEN MANUFACTURING CO., Humboldt, Iowa—Bulk handling equipment information will be explained by John Dodgen and staff.

DORSEY TRAILERS, Elba, Ala.—A new Dorsey Bulkmaster air unloading bulk feed body will be shown publicly for the first time. The Model J-A features a 6-in. screw conveyor and specially-designed rotary air lock feeder, both hydraulically-powered. A new, lightweight blower on the Model J-A provides a medium pressure air flow that is said by the company to hold pellet breakage to a minimum. The J-A is available in standard lengths from 10 to 16 ft., and as optional, in high-cube design for lightweight feeds. Standard equipment includes all-steel, electrically-welded and ribbed body, 32x32-in. sliding hatch covers with foam rubber seals, rear mounted throttle, tachometer, four 9-ft. flexible metal hose sections, and a rear ladder. George Ford, Bulkmaster division sales manager, will be in charge.

E. I. DU PONT DE NEMOURS & CO., Wilmington, Del.—The exhibit will be devoted to "Hydan" feed supplement, "Two-Sixty-Two" feed compound, "Impedex" mold inhibitor and a sodium propionate formulation for ketosis control. Newly-improved physical qualities of "Two-Sixty-Two" will be demonstrated. Du Pont Grasselli chemicals department and polychemicals department will join forces in sponsoring the exhibit. In charge will be R. J. Bacon, product manager, nutrition and therapy chemicals, Grasselli chemicals department, and Francis M. Jornlin, manager of the nitrogen products section, polychemicals department.

ERIEZ MANUFACTURING CO., Erie, Pa.—On display will be Alnico and ceramic powered grate magnets, plate magnets, magnetic pulleys, magnetic ferrous traps and barnacle magnets. These units are made for the removal of fine iron as well as tramp iron from both wet and dry material flows. The company will also show six models of its new HI-VI vibratory feeders. These feeders are capable of moving from a few ounces to as much as 50 tons of bulk materials an hour. The booth will be attended by R. F. Merwin, Eriez president; Ned Hirt, advertising and sales promotion manager; M. L. Cramer, office sales manager, and W. W. Moyden, Chicago district manager.

THE FEED BAG, Milwaukee, Wis.—Information on the company's various publications will be distributed. The booth will be attended by Eldon H. Roesler, Bruce W. Smith, Theodore P. Thery and Joseph Lukitsch.

A. T. FERRELL & CO., Saginaw, Mich.—The display will emphasize the Clipper seed cleaners, with Floyd J. Sovey and staff in attendance.

DAVE FISCHBEIN CO., Minneapolis—The display will consist of the demonstration of the firm's line of bag closing equipment from portables to belt conveyor models. Accessory items, such as the Faseal tape binding attachment and optional suspension units will also be included. Featured in the booth will be the new Model BA-6 automatic bag closing machine for multiwall paper bags. Company representatives at the booth will be George Fischbein and Sam Shark.

FLAVOR CORPORATION OF AMERICA, Chicago—Products to be featured at the show include Sucro Flavor livestock and poultry sweet feed flavor; Silo Joy forage flavor preservative; Cafnectar sweet milk flavor; Dustrol surface active dust control flavor; Canine Joy with Petnip dog food flavor, and Cat Joy with Petnip cat food flavor. Company representatives at the booth will be Talmadge B. Tribble, president; Philip J. Ruedig, sales manager; Clinton Tomlinson, northeastern sales manager; Harvey Peckham, north central sales manager; Noel McDonald, south eastern sales manager, and R. W. Nelson, west central sales manager.

FOOD MACHINERY & CHEMICAL CORP., Riverside, Cal.—The exhibit will consist mainly of the company's bulk transport system for carrying and unloading bulk feeds, pneumatic units and frameless semi-trailers. D. R. Copple, J. T. Adkins and R. D. Wyche will attend.

FULLER CO., Catasauqua, Pa.—A newly-designed "packaged" feeder made to facilitate the introduction of material into any kind of an air pressure conveying unit will be shown. It will handle any material which can be conveyed pneumatically, and will feed from a bin, hopper or conveyor. The manufacturer says that this "rotary-vane" type feeder provides greater efficiency because of a design feature which permits air entry in both head plates. Capacity is variable, depending on the type of installation and material being handled.

GHOSTLEY'S POULTRY FARM, Anoka, Minn.—The exhibit backdrop will consist of the Ghostley Pearl trademark and the qualifications of the Ghostley Pearl. Part of the display will be devoted to "complimenting the feed industry for the tremendous strides that it has made in the research and manufacture of feeds so that all segments of the poultry breeding industry may realize the full potential of their bird." John Meldahl, sales director, and Joe Eustice, sales promotion manager, will be attending the show.

GRAIN PROCESSING CORP., Muscatine, Iowa—This company manufactures primary fermentation products for the feed industry, and expects to have displays involving riboflavin, vitamin B_{12} and bacitracin. C. D. McDermott, vice president, will be in charge of the exhibit, and will be assisted by T. A. Bailey, H. Simander, Ken Gerharz and Gordon Fear. The firm plans to give away free buttered popcorn at the booth.

B. F. GUMP CO., Chicago—Equipment on display will include a model M, all-metal, Bar-Nun rotary sifter, two models of Draver feeders, an Edtbauer-Duplex automatic net weigher and a Vibrox bag packer. Also on display and in operation will be a Bar-Nun automatic bag feeder, opener and weigher. This automatic packaging machine feeds, opens, holds, weigh-fills and ejects paper bags, and is recommended for packaging up to 5-lb. bags of pet foods, cereals, corn meal and similar products. On duty at the booth will be Gail Allen, Roscoe Warner, D. C. Creighton and E. J. Miller. R. E. Williams, L. J. Nowak, Jr., and D. B. Spence will also attend the show.

PETER HAND FOUNDATION, Chicago—Wiley Akins and members of his staff will present complete information on vitamin and antibiotic custom premixes for feed manufacturers.

HARDY SALT CO., St. Louis, Mo.—Special salts for the feed industry, both for feed manufacturing and for resale, will be on display. Hardy "super trace" swine salt, a special trace mineral salt containing extra zinc, will be shown. Another product, Saltrazine, will be exhibited. Saltrazine is designed primarily for free-choice feeding to cattle for the control of internal parasites. Lewis T. Hardy, vice president, will be in charge of the booth, and will be assisted by Tom McGuire, Chicago district sales manager, Jim Christensen, sales manager, north central district, and Curt Mentzer, Ed Jones and Clarence W. Voelker, special sales representatives.

HARDY SCALE CO., Maywood, Cal. — Newly-designed automated equipment and controls will be on display at the Hardy Scales booth. In charge of the display will be Ted Alsbach and Bob Robin.

HAYES & STOLZ INDUSTRIAL MANUFACTURING CO., Ft. Worth, Texas—Four items of equipment will be shown: H&S Model "E" electric distributor with remote control panel; H&S Model "C" manually operated distributor with lower control stand; H&S two-ton horizontal batch mixer with H&S three-way action ribbon, and H&S solenoid-operated air gate. Both the Model "E" electric and Model "C" manual distributors will be fully-operating units. Vernon Hayes, president, will be in charge of the display, and will be assisted by Fred Jackson, assistant sales manager, and G. C. Stolz, production manager.

HENDERSON MANUFACTURING CO., Cedar Rapids, Iowa—The Henderson Chief, Model B-500 combination bulk-bag feed body will be exhibited. J. J. Fuller and sales staff will be on hand.

HESS & CLARK, INC., Ashland, Ohio—One of the Hess & Clark products to be displayed is Furazolidone (nf-180), a broad-spectrum antibacterial agent used against many specific and non-specific diseases. The company recommends it for use in prevention and treatment of pullorum, fowl typhoid, paratyphoid, paracolon and blackhead in chickens and turkeys; hexamitiasis in turkeys, and for the prevention and control of coccidiosis in chickens. Furazolidone has also been used against non-specific diseases. The exhibit will also demonstrate low-level nf-180 feeding schedules for layers. Attending the show will be Richard D. Waters, president; Russell H. Eshelman, vice president, marketing; Dr. Aaron L. Andrews, feed products manager; Fred W. Davis, service manager; Earl W. Morris; C. T. Ater; Kees Zwikker, and territorial sales representatives.

HOFFMAN-TAFF, INC., Springfield, Mo.—The company plans some special awards, and will give out information on its products for the feed trade. Maxwell Cooley, Pete Wertz and others will be there.

HOT SPOT DETECTOR, INC., Des Moines—Temperature measuring systems and engineered aeration systems will be exhibited. Bruce Fulenwider, Burt Powley and Robert Wilson will attend.

HOLT PRODUCTS CO., Milwaukee—The company will feature its trace mineral premixes sold under the Miricoe brand name. Holt makes specially designed premixes for poul-

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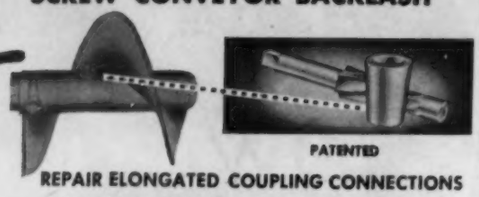
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Don't discard screw conveyors because of worn couplings! HERCULES bushings renew worn-out conveyor connections . . . provide constant snug fit for quiet running and less wear. Bushings . . . not the bolt . . . transmit the power, with greatly increased torque. Easily assembled without tearing down conveyor system.
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try, swine and ruminants, with high zinc levels adopted for the poultry and swine concentrates. Some new products developed by the feed department of the Pabst Brewing Co. will also be displayed in the Holt booth. These include the new enzyme feed additive known as Zymo-Pabst, as well as the bacitracin products, including the water soluble Bio-Pabst 333. The booth will be attended by Truman Dunlap and Frank Holt.

S. HOWES CO., INC., Silver Creek, N.Y.—The company will display its Eureka Granulator, used for coarse cutting of corn, wheat, barley, milo and soybeans. Coffee will be served at the booth starting at 10 a.m. each day. Each visitor at the booth will be given a card stamped with a number, to be worn in the lapel. When duplicate numbers are matched, prizes will be awarded. In charge of the display will be Alexis C. Barbeau, Jr., president and general manager; Richard P. Wesley, vice president, sales; James R. Everett, Floyd M. Garner and Bernard T. Kadow, sales representatives.

INTERNATIONAL MINERALS & CHEMICAL CORP., Skokie, Ill.—Dynafos, the dicalcium phosphate product sold by International's feed ingredients department, will be featured. Samples and informative brochures about the firm's products will be distributed. Representing the department will be John Westberg, Don Kruger, Colin MacDougall, Harold Steinman, Joe Bozis and Ben Sanders.

INTERNATIONAL SALT CO., Scranton, Pa.—Three products will be featured—Sterling Supermix Blusalt for livestock feed, Sterling Gold Bond Blusalt for poultry, and Sterling Swine Supermix Blusalt. The display will include Sterling farm salt resale products. H. Leigh Woehling, manager of the animal nutrition department, will be in charge of the display. His assistants will be Frank E. Hartman, district manager of the Chicago office, and Henry E. Kalter, sales supervisor of the Chicago office.

JACOBSON MACHINE WORKS, INC., Minneapolis—Jacobson will display a No. 8 Universal hammermill with rotary feeder and automatic electrical control. Also shown will be the firm's Ajacs-O-Matic hammermill with separate blower unit. A new, heavy-duty, single-row Jacobson crusher feeder will be introduced. Ralph M. Jacobson will be in charge of the display. John E. Hayhoe and Robert P. Olson will also be on hand.

KRAFT FOODS, Chicago, Ill.—Kaff-A products for ruminant feeds, Kraco dried whole whey, Kray-9 dog food supplement, Pex premix for poultry feeds and Kraylets premix for swine feeds will be exhibited. C. A. George, A. E. Flaherty, C. H. Bodtlander, H. P. Jackson and T. B. Cooper will be in attendance.

LAKELAND ENGINEERING & EQUIPMENT CO., Minneapolis—The Winsted Roto-Matic alfalfa bale shredder will be shown by O. J. Ulrich and B. C. Fox.

McKESSON & ROBBINS, INC., New York—Information on the products distributed by McKesson & Robbins will be available. In attendance will be H. McAdow, H. Gillott, S. Nielsen, C. Aldean, P. Dellios, B. Bankston, R. Segars, C. Barth, A. French, L. Enberg, R. Shaw, E. Johnson and R. Knuth.

MERCK & CO., INC., Rahway, N.J.—Merck's feed ingredients in general and its Agrozyme in particular will be exhibited at the Merck booth. Agrozyme is a mixture of enzymes for livestock feeds. Iowa tests show that Agrozyme increased weight gains 12%, and increased margins over feed costs $8.05 per steer in dry-corn experiments, the company points out. The feed ingredient show follows America's grains from the farm to the addition of Merck micronutrients to feed. At the show will be Thomas J. Treacy, director of sales and marketing; James E. McCabe, marketing director; Walter M. Bruso, north central region manager, and Clifford A. Scott, northwest region manager.

METALS DISINTEGRATING CO., Summit, N.J.—The pulverizing machinery division of Metals Disintegrating Co., Inc., will feature a working scale model of the jet-action Mikro-Pulsaire Dust Collector, along with a standard "Bantam" Mikro-Pulverizer. The miniature dust collector, specially constructed with glass panels, demonstrates the operating principle of Mikro-Pulsaire. The "Bantam" Mikro-Pulverizer is a small grinding mill used chiefly for laboratory and pilot plant operation, and in small batch production. The following staff members will man the booth: R. W. MacWhorter, sales manager; Maurice Bromley, assistant sales manager, and Lewis P. McKeever, engineering sales consultant.

MONSANTO CHEMICAL CO., St. Louis—Products of both the organic chemicals and inorganic chemicals di-

(Turn to page 123)

Ray Ewing
TURKEY GROWER PRE-MIX *

Supplies the Vitamin Fortification required to maintain the most EFFICIENT and most ECONOMICAL Growth in your customer's flocks.
* Another PERFORMANCE PRODUCT from one of the Feed Industry's most complete lines of Poultry, Turkey and Livestock vitamin pre-mixes, supplements, fortifiers and additives.
Write regarding any combination of vitamins, antibiotics, and/or special ingredients.
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QUALITY GOES IN BEFORE THE NAME GOES ON
THE Ray Ewing COMPANY

WONDERWALL® did it— *cut breakage down to less than one bag per car*

Fact! That's the report coming to us from Mr. R. H. Pierce, Purchasing Agent of Cooperative Farm Chemicals Association, Lawrence, Kansas. Mr. Pierce states:

"Our tests with WONDERWALLS convinced us—showed less than one broken bag per freight car. Then, in our first shipment—14 cars of fertilizer in WONDERWALL bags, we found only 9 broken bags, 6 of which were caused by nails.

"We are using WONDERWALLS that are 20 pounds lighter in total paper basis weight than the ordinary kraft multiwalls we had been using, and we know we're getting a better bag.

"The single biggest advantage in using WONDERWALL bags is satisfied customers."

WONDERWALL is West Virginia's new, tougher multiwall that outperforms ordinary bags because it's made of Kraftsman Clupak* paper. This extraordinary paper stretches and withstands punishment that breaks ordinary kraft.

See how the WONDERWALL would reduce your breakage and, very possibly, also *cut actual bag expense.*

Let a West Virginia representative show you how you can save with WONDERWALL. Just write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York 17, N.Y.

Clupak, Inc. trademark for extensible paper manufactured under its authority.

WONDERWALL™
Best bag of all

West Virginia Pulp and Paper

See our exhibit at
The AFMA Packaging Show

These agricultural leaders have seen – and recommend – this film

"I continue to get favorable comments on the film. As we push forward with the educational phases of the Rural Development Program, we hope to have the opportunity to encourage extensive use of the film."

True D. Morse, Chairman
Committee of Rural Development Program

". . . a great contribution to the problem of interesting students in agriculture."

I. S. Riggs, Vice President
The Quaker Oats Company

"I am sure it will be helpful in the job of recruiting capable young men in the field of agricultural science."

Earl L. Butz, Dean
Purdue University

". . . showed the film to 35 high school seniors in Marshall County, Ala. The response was excellent."

Romaine Smith, Youngfolks Editor
The Progressive Farmer

". . . the most practical and complete material of this nature that I have seen . . . will be of invaluable service . . . in conducting a Careers Day."

Jarrell D. Gray, Subject Matter Specialist
Agricultural and Mechanical College of Texas

". . . representatives of Michigan Agricultural organizations . . . were enthusiastic about this film."

Elmer A. Lightfoot, Executive Secretary-Treasurer
Future Farmers of America

"I am confident that this film will become extremely popular and will perform a valuable service to the youth of our nation."

Norman C. Mindrum, Director
National Committee on Boys and Girls Club Work

". . . I feel this film would be a very valuable addition (to our Agricultural Extension Service Film Library)."

W. P. Bradley, Associate Editor
VPI Agricultural Extension Service

". . . much impressed . . . would like to make extensive use of it here in North Carolina."

H. B. James, Director of Instruction
North Carolina State College

Pfizer offers the feed industry a planned program for recruitment of youth

Prepared with the cooperation of the USDA and the Association of Land Grant Colleges . . . it performs a non-commercial service designed to help you attract leaders for tomorrow

New film and complete "Careers Day" kit now available for use in your own public relations or recruitment programs

This year, the beginning of the second half century for the AFMA, finds agriculture falling short in its program of attracting and developing college-trained youth for tomorrow's leaders.

Less than half of the 15,000 college graduates needed by agriculture this year are selecting careers in this field. And the expanding feed industry—the nation's ninth largest—has a large stake in this problem.

That's why Pfizer has developed this new "Careers" program . . . and developed it as a public service which would permit integration into your present recruitment programs.

The focal point of the Pfizer contribution is a 28-minute color film called "Dynamic Careers Through Agriculture". This film, which took more than two years to make, presents the industry's story in a dramatic way.

The cooperation of the Association of Land Grant Colleges, the USDA, several agricultural schools and many companies in the industry were enlisted to make this production authentic, factual and interesting.

To help you integrate your program, a kit of collateral materials also has been developed. It includes suggestions on how to organize Careers Day activities . . . how to tie in with state college programs . . . speeches for Careers Day sponsors . . . publicity releases for newspapers . . . scripts for radio and TV stations.

Use of the film and kit is yours for the asking. If you have not yet seen them, please mail your request to the address below.

FILL OUT AND MAIL THIS COUPON

Chas. Pfizer & Co., Inc.
800 2nd Avenue
New York 17, New York

I would like to show your film "Dynamic Careers Through Agriculture" on or about _____ (date)

Alternate date: _____

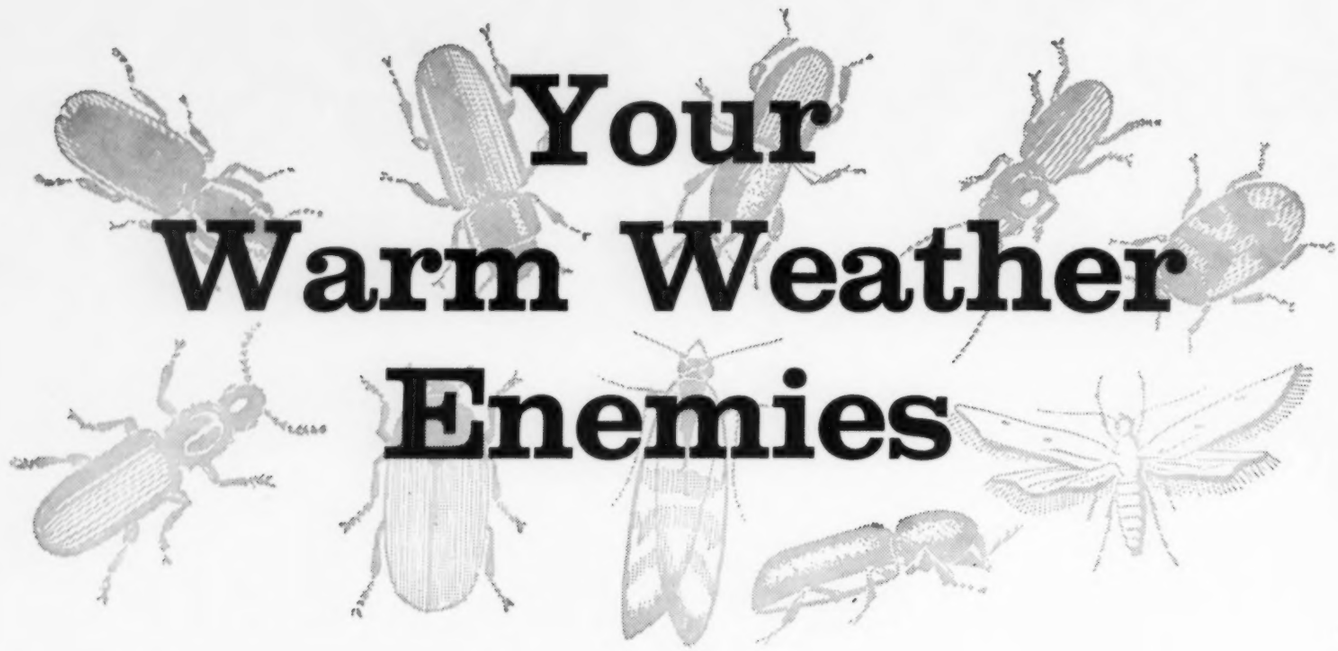
Please mail to:

Name _____

Firm _____

Street Address _____

City _____ State _____



Your Warm Weather Enemies

guard against them with

Douglas TETRAFUME

Here's the sure, quick way to protect your elevator stored grain and grain in transit from winter-starved insects. Although winter cold kills some of the insects in stored grain it seldom kills them all. When warm weather comes the survivors resume reproduction and rapidly develop heavy insect populations . . . eating up your grain . . . and your profits.

With TETRAFUME you can kill off the bugs that winter didn't. Poured on grain TETRAFUME quickly forms heavier-than-air gases that penetrate the grain and kill all stages of insect life. It helps remove musty and ground odors, too.

Act now to insure your grain will be in top condition at take-over time. Preventive fumigation, like preventive maintenance, will save you money in the long run.

4 gallons of TETRAFUME will completely treat a whole boxcar full of grain. For elevator, apply 2 gallons per 1,000 bushels of grain.

• •

For Farm and Flat Storage Fumigation Use Douglas TETRAKIL

TETRAKIL is a fireproof grain fumigant especially designed for use in farm bins and flat storage. Poured directly onto the grain it forms a heavier-than-air gas which penetrates to the bottom of the grain mass. Quickly kills all species of grain destroying insects yet is harmless to grain itself.

TETRAKIL is so potent it gives an effective kill even in loosely constructed bins.

For these profit-saving products see your Douglas dealer or call, wire, or write us today!

Grain Sanitation Division

Douglas Chemical Company

620 East 16th Avenue Telephone: Grand 1-3071 North Kansas City, Mo.

F-4

visions will be featured. The organic chemicals division will show MHA (Methionine Hydroxy Analogue); Santoquin, new antioxidant for use in poultry feeds and dehydrated forages, and Saccharin, a sweetener for improving palatability. In the organic chemicals booth will be James H. Senger, George L. Romoser, Kenneth H. Maddy and William J. Becher. The inorganic chemicals division will show urea supplement and phosphoric acid, dicalcium phosphate and di and monosodium phosphate. In attendance will be Donald R. Fischer, Nicholas L. Redding, Loyal E. Loveless and Arthur Q. Svoboda.

MORTON SALT CO., Chicago—Trace mineralized salt and various grades of mixing salt will be among the products displayed at the Morton Salt Co. exhibit. Representing the firm will be R. A. Simpson, general industrial sales manager; P. W. Mattson, manager, agricultural products division; J. W. Megown, staff nutritionist, agricultural products, and J. D. MacGillivary, R. R. Wright and William Huff.

MYERS-SHERMAN CO., Streator, Ill.—C. Robert Myers, Dan G. Keller and staff members will show bulk and portable equipment for the feed and grain trade.

NATIONAL ALFALFA DEHYDRATING & MILLING CO., Kansas City—Featured will be the firm's new 18% Hi-N, 125,000 A with maximum fibre content of 23%. Also to be shown will be 20% broiler-layer grade dehydrated alfalfa which will be marketed in pellet form or reground and shipped in either bulk or 50-lb. and 100-lb. bags. The product has maximum fibre of 20% and 150,000 I.U.'s of A per pound. In attendance will be A. R. McFadden, vice president in charge of sales; Tom Grill, division sales manager; Lowell Price, division sales manager, and Don Merrick, division sales manager.

NATIONAL RENDERERS ASSN., Chicago—Theme of the exhibit will be on the "Beatnik" general, and information on feed ingredients will be passed out.

NICHOLS, INC., Exeter, N.H.—Joseph S. Higgins, A. W. Spaulding, Jr., and R. A. Goodell will be on hand to exhibit the Nichols 108 crossbred pullets.

NOPCO CHEMICAL CO., Newark, N.J.—The Nopco Chemical Co. agricultural department will feature "micratized" vitamins A and D in its exhibit. Also highlighted will be Nopco-Paks, Nopco custom premixes. In attendance will be Dr. M. Hochberg, vice president in charge of the fine chemicals division; A. V. Jay, eastern sales manager; R. T. Whelan, central sales manager, and F. M. Aldridge, H. N. Allen, M. Bass, L. J. Dye, Dr. I. W. Lane, B. G. Powell, H. C. Pryor, R. H. Wyman and K. V. Vanderburg. Also in attendance will be Dr. Harold Yacowitz, director of applied research, and Jack Rovics and R. F. Gunkel.

NORTH AMERICAN MANUFACTURING CO., Sioux City, Iowa—The Bulkanizer bulk feed truck body display will be shown by Don P. Dillman and M. L. Moreland.

PAMCO, INC., Keota, Iowa—Members of the sales staff will exhibit bulk equipment for feed handling.

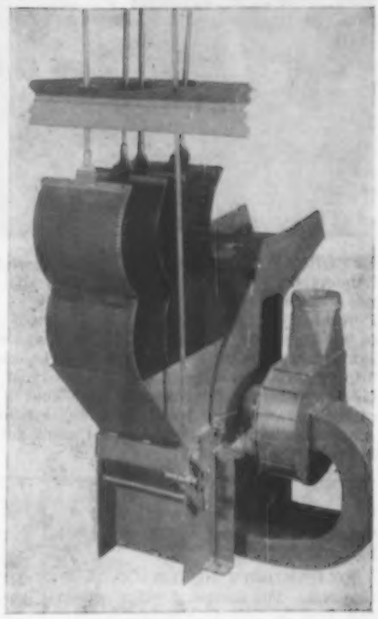
CHAS. PFIZER & CO., INC., New York—Pfizer will call attention to the world-wide application of feed additives in an exhibit which will use an agricultural research theme in an international setting. The theme will be "Pfizer, Partners in Agriculture Around the World." The booth depicts how Pfizer research results are translated into marketing programs for the American farmer, and then carried to over 50 countries around the world. Attending will be J. J. Thompson, vice president; Hugh O. Dermody, assistant general manager; A. E. Wilson, feed supplement product manager; R. E. McLeod, assistant feed supplement product manager; E. G. Schmidt; A. C. Calkins; M. T. Fredericks, and C. T. Black.

PRATER PULVERIZER CO., Chicago—Prater will display one of its large AC hammermills and several of its rotary airlock feeders. Also on display will be a model package feed mill with a large rocket display identifying a new Prater feature entitled "Praternautics." This is a merchandising feature which shows how Prater equipment "can boost the feed miller's business into the profit orbit." William Earl, sales manager, will be in charge of the display, and he will have with him as assistants Robert Prater, vice president; Elmer Hase, assistant sales manager, and John Kotilnek, chief engineer.

RAPIDS MACHINERY CO., INC., Marion, Iowa—The manufacturer of Marion mixing equipment, Rapids Machinery Co., will exhibit the following: New 3-ton, extra heavy duty industrial single tub mixer for mixing dry materials; a heavy-duty model mixer for production mixing, premixing or small batch mixing operations; Marion laboratory mixer for laboratory or production work; the Marion finisher, designed to eliminate lumps or cakes formed during shipment, packing, etc. In attendance will be

New Schutte Low-Priced Device Changes Mill Screens From Floor Above

Developed to save time and steps, a new, remarkably low priced attachment enables Schutte Hammer Mill screens to be replaced instantly from the floor above.



By means of extension handles, any one of 5 selected screens up to ¼" thick can be inserted or removed while the mill is running. With easy operation made possible by the positive action of the Schutte Patented Eccentric Lock, this new Floor-Above Screen Change feature is available for all standard Series 10 Schutte Hammer Mills. Fool-proof and trouble-free, it can be adapted to any ceiling height. Design prevents leakage around the mill.

From his upstairs station the operator simply uses the extension handles to release the screen lock, lift up the screen to be replaced, lower the new screen into position, and re-lock the entire mechanism. Milling continues uninterrupted.

Schutte manufactures a complete line of hammer mills and accessories, including replacement parts.

REQUEST NEW BULLETIN

For new Bulletin HW 458, and prices, write Schutte Pulverizer Co., Inc., 878 Bailey Avenue, Buffalo 6, N. Y.

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EUROPEAN VISITOR—Jean Dreiss, assistant technical director for Louis Sanders Co., manufacturer of vitamin and mineral supplements with plants near Paris, France, was guest speaker at a recent meeting of the Kansas Formula Feed Manufacturers. He discussed promotional aids his company uses in working with French veterinarians and feed manufacturers. Mr. Dreiss is shown in the center looking at a slide. Looking on are John Kelso (left), Kelso Milling Co., Pittsburg, Kansas, secretary of the Kansas feed group, and Jack Grubb, Naturich Mills, Abilene, president of the Kansas group and a director of the Midwest Feed Manufacturers Assn. Mr. Dreiss is visiting the U.S. as a representative of the French feed manufacturers' group in a study of trends in the U.S. feed industry.

V. J. Coleman, president; Van C. Coleman, Jr., vice president, and Richard D. Snyder.

RICHARDSON SCALE CO., Clifton, N.J.—The company will show its full line of Select-O-Weigh proportioning equipment. In addition to the weight selectors, there will be a Richardson Boss Board which permits selection of weight by means of pegs in a peg board. Along with an operating E-50 scale, there will be shown the Richardson G-75 impacker, the Richardson GA-11 bag conveyor, and sewing pedestal and sewing head. A new item will be a 5,000-lb. bulk feed hopper scale. Also exhibited will be the Richardson GA-17 gross weighing-bagging scale. H. Bandstra, advertising manager, will be in charge. Others present will be Ingram H. Richardson, president; W. M. Young, director of sales; W. L. Hamilton, vice president; R. Gatti; Howard Johnson, and W. M. Gay.

ROSKAMP HULLER MANUFACTURING CO., INC., Cedar Falls, Iowa—The display will include the Challenger oat huller with flaking roll, and a 9x24 in. double duty grain roller mill. The 9x24 in. roll will be shown only in a separate stand for interested parties to inspect. Samples of rolled grains also will be shown. Clarence and Harold Roskamp will both be in attendance at the booth.

ROSS MACHINE & MILL SUPPLY, INC., Oklahoma City—The exhibit will feature the 12x24 Ross Jr. Special Crimper with integral motor base, motor and V-belt drive, and accessory equipment. As an added feature, a 7x14 Ross experimental mill will be shown. Both of the above mills will be powered to show viewers the various operating features. R. O. Grundon, sales engineer, will be in charge of the exhibit. Others in attendance will be P. J. Montgomery, president; H. H. Stark, vice president, and O. A. Crooks, sales engineer.

DR. SALSBURY'S LABORATORIES, Charles City, Iowa—A general exhibit is planned featuring the firm's complete line of feed additives, plant expansion and services to the feed industry. Special promotional emphasis will be given to Unistat and Histostat. Attending will be Dr. John G. Salsbury, vice president and general manager; H. G. Bos, director of marketing; T. W. Freeze, general sales manager; James M. Keith, merchandising services manager; Dr. J. F. Harr, industry services manager, and Donald E. Dexheimer, feed products manager. The following district sales managers will attend: W. H. Hazen, S. Thornton, V. I. Helgen, A. H. Jeannoutot, L. L. Sauer and Dr. D. W. Cummins.

SCHUTTE PULVERIZER CO., INC., Buffalo, N.Y.—The firm will display its new, patented feed control system for its line of heavy-duty hammermills. Feed flow can be regulated manually—at mill or from floor above—or electrically from any location, thus doing away with the need for a separate crusher-feeder and allowing the hopper to be filled before the mill is started, according to the manufacturer. Instant screen changes can be made while the mill is running without raising the top, the manufacturer says. In charge will be Herman D. Schutte, president, and Alfred Hunt, secretary.

SEEDBURO EQUIPMENT CO., Chicago—The display will feature the Meyermatic automatic feed weigher designed for use for the livestock feeder. The new Stohr power shovel will also be shown, along with the Stone Sleuth, "magic ear protection for corn shellers," a portable bulk scale, moisture testing equipment including the 500-RC Steinlite and a new vertical bag stacker. A "shoe shine" service is planned for visitors. Rex Yocum, president, will be in charge. Assisting will be Jack Snader, sales manager, Chuck Hancock, operations manager, and George Piontek, manager of Steinlite sales.

SOUTHWESTERN ENGINEERING CO., Los Angeles—The company will demonstrate its 18-in. diameter Sweco separator, a machine for separating feed pellets from crumbles and fines. The display will show photographs of the separator as used in the feed industry. Literature on other Sweco processing equipment and plant engineering and construction services will also be available. Attending the booth will be A. A. Ficery, sales manager of the separator division; F. P. Arnold; F. N. Capparelli; K. K. Kramer, and A. D. Schleiffarth.

SPROUT, WALDRON & CO., INC., Muncy, Pa.—The high spot will be a series of technical seminars in a special conference room which will be part of the exhibit. Subjects are: (1) How to get the most out of your pellet mill; (2) planning a custom feed mill; (3) designing a commercial feed mill; (4) the promise of bulk handling. Another feature is a Dictaphone Telecord system with free secretarial service for visitors. There will be a rotating photo panel showing mills designed by Sprout-Waldron and processing and handling equipment. George Black, advertising manager, is in charge. Others present will be H. M. Soars, H. J. Alsted, J. H. Waldron, C. D. Fisher, J. W. Dickinson, Robert Stroup, R. W. Russell, S. E. Brong and R. B. Collier.

STERWIN CHEMICALS INC., New York—The combined Sterwin, and Dorn-Mitchell booth will feature the use of CocciVac and Trithiadol in the control of coccidiosis, with special emphasis on "protection team immunity." Also featured will be Dorn-Mitchell virus vaccines, and the complete line of feed additive products produced and sold by Sterwin. L. R. Patton will be in charge of the display. R. S. Whiteside, Sterwin president; J. W. Salyers and R. W. Buck, Sterwin representatives for the feed industry, and J. A. Revord, Chicago regional manager, will also attend.

STONE MOUNTAIN GRIT CO., Lithonia, Ga.—Products to be shown include Stonemo poultry grit, Sta-Kleen nesting material and Hydro-Tite soil conditioner. M. W. Meyer, Charles L. Davidson, Charles L. Davidson, Jr., and Charles E. Rohde will be on hand.

STRONG-SCOTT MANUFACTURING CO., Minneapolis—The firm will have its latest models of hammermills and mixers on display. The "triple-action" mixer is a horizontal batch blender with a multi-action mixing agitator that gives thorough dispersion of minor ingredients in 2-7 min., the manufacturer reports. The "twin-rotor" mixer with inverted "U" shaped paddles is a new development for continuous mixing. Other new Strong-Scott machines will be featured in large photographs. Company representatives will include G. A. Carlson, chief mechanical engineer; R. W. Fredrikson, assistant general sales manager, and A. J. Bury, assistant sales manager of the grain division.

TASTE ENGINEERING CO., INC., Chicago—The company will feature its basic line of Liqua-Solid "double strength" patented taste-flavor materials. Also to be shown will be "Basic-9" dog food premix. An exhibit of Silage Zest concentrate as well as the finished Silage Zest preservative will be shown. A recently-added line of pre-mixes incorporating an enzymatic system plus vitamins for swine, beef, dairy, chickens and turkeys will also be shown. In charge will be Edward F. Hartman, sales vice president. Norman K. Stanton, vice president, and Edward R. Kohl, president, will also be on hand.

TOBIAS ENTERPRISES, Chicago—Phil W. Tobias, Sr., will present methods to merchandise poultry and eggs in line with modern practices.

TOLEDO SCALE CO., Toledo—Toledo bulk weighing systems and Toledo checkweighers which weigh from 50 lb. to 200 lb., and up to 40 items per minute will be shown. Personnel will include F. D. Instone, W. M. Evans, D. W. Kennedy, G. T. Gray, F. L. Thomas and L. R. Hummel.

UNION BAG-CAMP PAPER CORP., New York—Union multiwall bags and I&C bagger machinery will be highlighted in the company exhibit with actual demonstrations of Union's I&C bagger automatically filling, closing and weighing Union multiwall open mouth bags. Company personnel in attendance at the booth will be J. J. Patterson, Jr., W. F. Jacobi, C. M. Inglett, W. L. Inglett, J. F. Hordych, W. Inglett, M. Parsons, J. C. Bauman, W. J. Staler, G. J. Schutt, E. G. Ruckel and C. J. Corso.

UNION SPECIAL MACHINE CO., Chicago—Union Special will display its new Class 2100 lightweight portable electric sewing machine for closing all types of filled bags. In addition, the new 53600 H for high speed, heavy production will be on display. Union Special personnel on hand at the exhibit will be Orville A. Ulrick, district manager, Chicago office; Kenneth D. Bear, manager of distribution; Fred W. Koehler, representative, Chicago office, and Henry Kaiser, sales promotion department.

UNIVERSAL HOIST & MANUFACTURING CO., Cedar Falls, Iowa—The display will include a Universal bucket elevator in operation, and a Universal Trofbelt conveyor. Koert S. Voorhees, Jim McKillip, Jr., and Chuck Yost will attend.

VINELAND POULTRY LABORATORIES, Vineland, N.J.—The new Vineland Aquaflo drug proportioner, which delivers medicated water any distance or height on ordinary water pressure without motors, pumps or electricity is one of the devices to be exhibited. Other featured items will be the Beefaid pellet implanter, an automatic implanter for beef cattle, and the Hormonaid pellet implanter, a similar hormonizer for the poultry industry. Also on display will be Caponade, Vipol's liquid hormonizer for chickens, and poultry vaccines, drugs and antibiotics. Staffing the exhibit will be Charles Furlong, Ferrar Renzuli and C. N. Cordis.

WALLACE & TIERNAN INC., Belleville, N.J.—The exhibit will center around the Merchen pneumatic feeder. The feeder will be operating in conjunction with a Sprout-Waldron pneumatic conveying system, with a recorder continuously recording the feed rate, according to T. H. Leggett, Jr., assistant advertising manager.

WATT PUBLISHING CO., Mt. Morris, Ill.—The company will show samples of its publications and its services to the related industries. Company representatives will include Leslie A. Watt, O. A. Hanke, M. M. Buell, J. H. Florea, Ray Bates, Milton R. Dunk, Fred H. Masterson, John H. Hough, C. M. Hall, Kenneth E. Scott, and Robert M. Harrison.

WENGER MIXER MANUFACTURING CO., Kansas City—Wenger's new 100 h.p. "multi-duty" pellet mill will be shown. The unit includes feeder extension (so mill can be fed from 2-4 overhead bins), and variable speed feeder drive motor; mixing-conditioning cylinder; molasses conditioning feeder with heating coils; liquid level control; steam regulator; metered flow pump; pump control and meter; vertical ring type, wide faced pellet die, and adjustable rolls and knives. Also shown will be the optional high-molasses extruder available with "multi-duty" mills, and liquid application and control equipment, as well as views of its horizontal pellet cooler and pellet mills. Attending will be Louis Wenger; Kenneth Sanderude, sales manager; Allen Rickert, assistant sales manager; Chuck O'Rourke, central area sales and service engineer; LaVon Wenger, production manager, and Oak B. Smith, director of market research.

WESTERN CONDENSING CO., Appleton, Wis.—The company will feature Peebles' products as whey ingredients. Specific products to be displayed are Peebles' M-N-C, a delactosed whey, Peebles' LactoG, a whole spray dried whey, and a new dog food ingredient, Peebles' D.D.F. Carl Wilkey and Hugh Huppert, district managers, will preside at the booth.

WEST VIRGINIA PULP & PAPER CO., New York—The display is designed to illustrate toughness and economy in the multiwall bag division's Wonderwall bag, which is made from Clupak paper. In addition, there will be a machine to demonstrate the stretch which has been put into Clupak paper. John Frahm, Chicago district sales manager, will be in charge. Tom L. Jones, regional sales manager of the division, and Don Munson, Chicago sales representative, will also be present. Brad Jacobs, sales service representative, will be "booth captain."

WHITMOYER LABORATORIES, INC., Myerstown, Pa.—The firm's Carb-O-Sep, a blackhead preventive for turkeys, will be featured. Also shown will be Whitmoyer's line of nutritional and pharmaceutical products for feeds. These will include: Whit-

syn for coccidiosis control; Whitcod, codliver oils; Tra-Min, a trace mineral concentrate; Kemitracin, an antibiotic complex; Histocarb, for treating blackhead in chickens; Vermazine, for worm control, and others. Attending will be C. W. Whitmoyer, president; Hank Suppan, sales manager, George Cook and Paul Snider.

Distributors Named

EAST ST. LOUIS, ILL. — Alloy Hardfacing & Engineering Co., Minneapolis, Minn., and Bearing Distributors, Inc., Kansas City, Mo., have been named stocking distributors for the plastic elevator bucket manufactured by the Dura-Buket Division of the National Oats Co.

High-Level Energy Work with Pigs Told at Arkansas

FAYETTEVILLE, ARK.—Pigs can utilize higher levels of energy than are normally used provided adequate protein is fed, according to latest research from the University of Arkansas' Agricultural Experiment Station.

Drs. P. R. Noland and K. W. Scott, department of animal husbandry, conducted two feeding trials to determine if it's possible to add stabilized animal fat to the ration. They found that including 10% fat in a 16% protein growing and finishing ration increased average daily gain from 1.65 to 1.81 lb., reduced feed required per pound of gain from 3.2 to 2.7 lb., trimmed 10 days off the length of the feeding period and saved 80 lb. feed per pig.

The differences were obtained during the entire feeding period, which covered the time when pigs weighed 40 lb. until they weighed 200 lb.

"Whether such a substitution is desirable depends on the prices of fat and corn," Drs. Noland and Scott said. "With prices that prevailed during 1957-58 (8¢ lb. for fat and 2.26¢ lb. for corn) the only benefit derived from feeding fat was reduction in the length of the feeding period, since the feed cost per pound of gain in the two groups was identical. During periods when fat is lower and feed grains are relatively higher in price, adding fat could reduce feed costs."

They reported that in the same series of tests, including 8% fat in a ration containing 12% protein resulted in depressed rate of gain, especially during the early part of the feeding period for pigs weighing 40-75 lb.

"After the pigs weighed 125 lb., those fed the 12% protein ration containing 8% fat gained very rapidly and efficiently," Dr. Noland and Scott said.

The researchers emphasized that the key to success with this program is to supply adequate protein to pigs that are thrifty and have the inherited capabilities for rapid growth.

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SKID-MASTER

Tough kraft multiwalls...with a non-skid finish you can't see or feel!

Don't sacrifice strength, good looks, or printability for skid-proofing! Skid-Master multiwall bags provide protection against sliding damage with an "invisible" non-skid finish built right into the paper itself! No sticky coatings, tacky sprays, or surface grit... just clean, tough, non-skid kraft! Call or wire Olin Mathieson today: Packaging Division, W. Monroe, La.

OLIN MATHIESON PACKAGING DIVISION

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NEW PACAL HAMMER
holds 50% more tungsten-carbide

Note the Serrated Edge Design* on the PACAL Hammer at left. You get 50% more tungsten-carbide on the working surface. New PACAL Hammers sharpen as they wear, hold their edge, cut cleaner. Last 25% longer than ordinary hard-faced hammers. Call or write the Hammer Division.

*Patent Applied For
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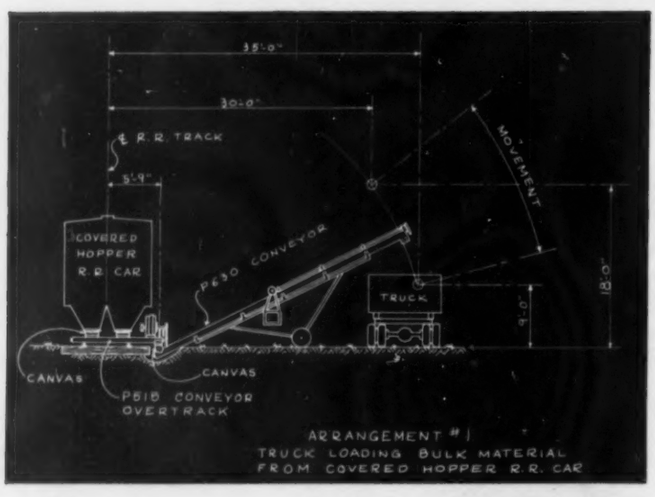

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No. 1 of 7 different Andrews setups

Use any one of seven different ANDREWS setups to unload bulk feed, ingredients, fertilizer, grain. Simple in design, sure in operation. ANDREWS Equipment saves you time and money in handling—adds to the service you give, the profit you make. Basic system combines ANDREWS *very high capacity* Screw Unloader (Overtrack or Undertrack) with the ANDREWS Portable Screw Conveyor. Smooth-operating and carefully integrated, these completely-assembled, ready-to-go units keep your "load line" clear at all times—to give improved operation and increased earnings!

WRITE for details, prices on 7 different ANDREWS setups!

ANDREWS MACHINE COMPANY
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Canadian Prepared Feeds for Poultry, Livestock and Other Animals

Production, 1948-1952 — Shipments, 1953-1958

Year	Total tonnage (000)	Per cent* poultry	% Dairy cattle	Per cent swine	Per cent‡ miscellaneous
1948	1,597	43.6	21.5	28.9	6.0
1949	1,625	44.8	21.0	28.6	5.6
1950	1,704	42.1	20.0	32.1	5.8
1951	1,852	43.8	17.1	32.8	6.3
1952	1,946	43.9**	16.8	32.9	6.4
1953	1,902	49.4**	18.4	26.5	5.7
1954	2,043	50.6**	18.6	25.6	5.2
1955	2,102	47.6**	19.2	27.4	5.8
1956†	2,454	49.2**	19.4	25.9	5.5
1957	2,541	49.5**	21.1	24.8	4.6
1958¶	3,046	47.0**	19.6	29.0	4.4

**Of the total tonnage of poultry feed manufactured the breakdown by type is:

Year	Broiler feed	Turkey feed	Other poultry
1952	n.a.	9.8	90.2
1953	10.1	9.7	80.2
1954	10.3	10.2	79.5
1955	13.2	10.0	76.8
1956†	17.4	11.7	70.9
1957†	18.4	11.9	69.7
1958¶	17.2	30.8	52.0

*Does not include scratch feed.

†Revised.

‡Includes calf feeds and concentrates, other livestock feeds and concentrates, N.E.S., mineral mixtures, feed for dogs, cats, foxes, mink, rabbits, goats and other animals.

¶Preliminary.

Canadian Feed Sales Up 20%

WINNIPEG—An upward trend has been shown in the sale of prepared stock and poultry feeds in Canada. Last year, according to the Canadian Department of Agriculture, shipments of concentrated feed totaled 437,546 tons and completed feeds totalled 2,506,704 tons. This represented a 20% increase in each category over 1957.

Contributing factors according to CDA include: (1) "A growing awareness on the part of the producer of the value of balanced feeds, (2) increased numbers of livestock and poultry and (3) a strong educational program sponsored by feed dealers and others."

The current boom in the chicken broiler industry, has added impetus to feed sales. Broilers receive completed feeds, and last year there were about 62,600,000 raised in Canada.

In 1957, there was a 5.5% increase over the previous year, and in 1956, a 17% boost was shown over the year before. Total shipments in the years 1952 through 1955 increased annually by a small amount.

Some feed tonnage details are shown in the accompanying table provided by the Canadian Feed Manufacturers Assn.

Fish Co-op Successful

DUMAS, ARK.—In the first nine months of operation, 375,000 lb. of farm-raised fish have been processed at the Dumas plant of the Fish Farmers Cooperative Assn. The Dumas plant is reported to be the first in the U.S. to process warm water, farm-raised fish. A total of 12,000 to 15,000 lb. is being marketed weekly to several food chains and independent stores.

Jacobson Names Three Sales Representatives

MINNEAPOLIS—R. M. Jacobson, vice president, Jacobson Machine Works, Inc., Minneapolis, recently announced three sales appointments.

John P. (Jack) Miller, Minneapolis, is representing Jacobson in central and eastern Iowa. W. A. (Will) Donaghy, Minneapolis, represents the firm in central and eastern Wisconsin and W. Beverly Moore, Kansas City, is the representative in Kansas, northern Arkansas and in parts of Missouri.

Mr. Jacobson said the representatives will be handling the full line of Jacobson equipment for custom and commercial feed plants. The Minneapolis firm is one of the nation's oldest builders of hammermills and feed milling equipment.

SELLIN' SAM — By Jim Zilverberg

"Guess where they're holding the feed dealers' convention this year!"

● No. 2 in a series of conversations with Gooch Feed Dealers

"The Gooch plan for bulk feed makes sense!"

"If a feeder is using enough volume of any particular feed, bulk handling can save him money. It cuts down on labor. There's no waste from spilling. And he gets rid of the rodent and moisture problems. When I decided to sell bulk feed as well as bag, Gooch made it easy for me. They had the bulk bins for me and my customers, too. My Gooch man worked right with me. I found out that whether I need a hopper car, part car, or truckload, Gooch service is fast and dependable. Sometimes I use their direct to farm delivery. All in all, I'm much pleased. My business is up. And bulk customers don't switch around from brand to brand."

Gooch's bulk plan is another program which is helping dealers expand their volume and lists of customers. The plan is flexible to fit most any dealer operation. You may be considering a bulk program right now or in the future. Before you act, talk it over with your Gooch representative and profit from Gooch's experience.

There are a limited number of Gooch franchises available. If you are in the feed business to stay, write Gooch Feed Mill Company.

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GOOCH RED CIRCLES ARE VALUABLE! GOOCH'S BEST COLLECT THEM

Certain Fats May Contain Unidentified Factor, Cornell Researchers Note

ITHACA, N.Y.—Evidence has developed to show that some of the effects of fats in poultry nutrition may be due to nutritional properties other than energy value.

This was pointed out recently in an article in "Cornell Feed Service" by Dr. F. W. Hill and Dr. L. C. Norris of the Cornell University poultry husbandry department.

Recent work at Cornell, it was noted, has shown that marked stimulation of early growth rate can be obtained by supplementing a purified laboratory type diet with various fats. The most striking and consistent effects have been obtained with liquid unsaturated fats such as corn oil, soybean oil and peanut oil at levels of 10% or more in the ration. A 5% level of added oil has not produced a maximum effect, while 20% fat has been no better than 10%. Lard has been somewhat variable in its effect, while a hydrogenated shortening was ineffective.

In all of this work, the Cornell scientists said, care has been taken to add the fats on a basis which substitutes fat Calories for carbohydrate Calories in a precise system which maintains constant nutritive balance. Somewhat similar findings have occurred in experiments conducted at the University of Illinois, the University of Maryland and in scattered experiments from many other laboratories.

Practical Ration

A similar stimulatory effect, said Drs. Hill and Norris, has been obtained with a practical ration based largely on corn and soybean oil meal, such as those typically used in broiler production. Including 7.5% soybean oil in such a ration improved growth rate by approximately 8% over a similar ration unsupplemented with fat.

"The explanation of the stimulatory effect of these fats is uncertain at the present time," the Cornell researchers said. "All of the effective fats are high in metabolizable energy value; however, their growth-promoting effects do not appear to be directly correlated with or explainable by their energy contribution. It is possible that a new unidentified factor, possibly vitamin-like in nature, may be responsible.

"Work at the Beltsville laboratories of USDA has shown that egg yolk contains a growth-stimulating factor which is present in the fatty part of the yolk and which has chemical characteristics suggesting a vitamin-like substance. Work at the University of Illinois has shown that corn oil and egg oil have similar properties for growth stimulation.

"Fundamental studies to show whether the effect of the stimulatory fats can be explained by their energy contribution have yielded conflicting results. Studies at the University of Illinois have shown that under conditions equalizing energy levels, corn oil continues to have stimulatory effects; in experiments of a somewhat different nature at Cornell, using a less highly purified diet, equalizing energy levels cancelled out the growth stimulating property of corn oil. The key to explaining the stimulatory effect of fats may be held in the differences between these experiments."

The practical implications of the new findings, it was pointed out, are not definite as yet. The preliminary observation that soybean oil is capable of stimulating growth rate in a typical broiler ration indicates that some practical benefits may be achieved, according to Drs. Hill and Norris. On the other hand, extensive experiments with feed grade fats at the University of Maryland and elsewhere have indicated that the beneficial effects of adding low levels (2 to 3%) on growth rate are not improved by feeding very much higher levels of fats, even though efficiency of feed conversion continues to improve.

"If the beneficial effects of fats in our recent experiments are indeed due to some unidentified trace nutrient," said the Cornell scientists, "it is likely that this factor would exist in varying amounts in different fats or different lots of a given fat. In any case, it is quite clear that there is an effect of certain fats in improving performance of growing chicks which is not predictable from a knowledge of energy values."

The economic place of fats in practical nutrition will continue to be dependent very largely on the economic worth of their energy contribution, it was pointed out. However, the special effects must also be recognized. Further research is needed to establish the nature and economic value of these properties.

Panogen Moves Offices

CHICAGO—Panogen Co., agricultural chemical division of Morton Chemical Co., is moving its headquarters and sales offices from Ringwood, Ill., to the Morton Salt Building in Chicago, it was announced by Petrus Hellman, president and general manager of Panogen.

The company markets agricultural pesticides. Mr. Hellman pointed out that new product development will continue at the Morton Research Laboratory in Woodstock, Ill.

Alabama Poultry Group's Session Set for June 8-10

MONTGOMERY, ALA.—The seventh annual Alabama Poultry Industry Assn. convention will be held at the municipal auditorium in Birmingham June 8-10. The three-day meeting will include a display of approximately 100 commercial exhibits. A meeting room in the auditorium will accommodate more than 1,000 people.

The first general session is to start at 2 p.m. June 8, with a panel discussion of hatchery problems headed by Don M. Turnbull, executive secretary, American Poultry & Hatchery Federation, Kansas City, Mo.

During the morning of June 9, the Alabama Feed Assn. will have charge of the program. "Feeding Layers for Commercial Eggs" will be discussed

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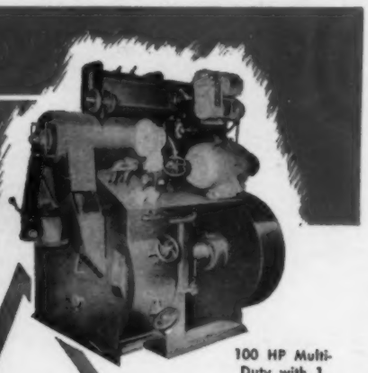

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100 HP Multi-Duty with 2 Liquid Feeders

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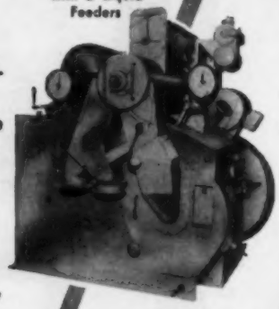

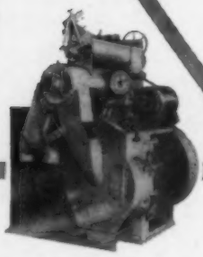

50 HP Multi-Duty with Draver type percentage Feeder (motorized variable speed drive optional)

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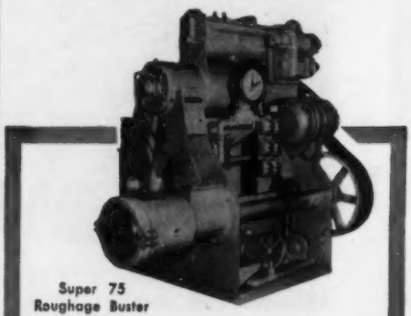
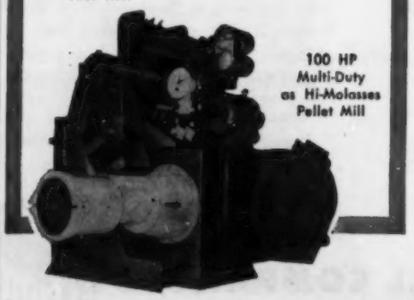


Super 75 Roughage Buster Hi-Molasses Pellet Mill



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Multi-Duty produces every major type of feed in demand today from a single packaged unit Pellet Mill

- Hard pellets (with or without liquids)
- Wengerblended mash feeds (1 or 2 liquids)
- Hi-Molasses pellets (optional)

Only WENGER Multi-Duty Offers such ECONOMIES

- in total equipment cost
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- in liquid proportioning
- in floor space
- in installation costs
- in minimizing contamination hazards

Roller Chain Model Horizontal Pellet Coolers. Crumble Rolls and Scalper not shown here.

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IRRADIATED DRY YEAST
RICH IN VITAMIN D FOR FOUR-FOOTED ANIMALS

by Dr. Robert Harms, department of poultry husbandry, University of Florida. "Merchandising Feeds" is the subject assigned to George P. McCarthy, district manager, Allied Mills, Inc., Atlanta.

The Alabama Feed Assn. is planning a noon luncheon and business meeting, and the ladies' luncheon and entertainment will be held also at noon June 9.

Speaking on poultry legislation during the afternoon of June 9 will be Frank G. Wollney, field service director, Institute of American Poultry Industries, Chicago. There also will be a panel discussion on broiler auctions.

June 10 has been designated as Producer Day, and it is anticipated that some 1,500 Alabama broiler and egg producers will attend. The subject of "Selling Our Poultry Products" will be covered during the morning program. Curtis Collier, southern manager, Poultry & Egg National Board, Atlanta, will discuss eggs; Gordon Sawyer, southeastern manager, National Broiler Council, will tell what NBC is doing in selling and promoting broilers, and Mr. Turnbull will talk on the National Egg Council set-up and plans.

Dr. E. T. York, newly elected director, Alabama Agricultural Extension Service, will address the group at 11 a.m. Also present will be R. C. Bambert, Alabama commissioner af agriculture, and other state leaders who will be called on for remarks.

A variety program, "Broilers and Eggs—Where Are We Headed?" will be conducted by Dr. Harry M. Lover, head, agriculture economics and sociology department, Virginia Polytechnic Institute, at 2 p.m. June 10.

The convention will close with the annual banquet and poultry queen contest at 6:30 p.m. June 10.

Work on Dehydrated Pelleted Alfalfa Silage

BELGRADE, MONT. — An alfalfa dehydrating firm here, the Belgrade Alfalfa Mills, has been working for some time on the dehydration and pelleting of alfalfa silage.

The alfalfa is stacked in the field; then it is brought in and put in a pit. Subsequently it is dehydrated and pelleted.

Maynard Johnson, manager of the firm, said that initially there were some problems in pelleting but that these had been overcome.

The pellets are being used in feeding tests to determine feeding results. It is thought that it might be possible to preserve nutrients better and obtain better feed conversion with the dehydrated, pelleted product.

BUILDS BULK PLANT

DANVILLE, IOWA — The Des Moines County Farm Service Co. has announced a $50,000 building and improvement project to add to its facilities. Included is a bulk feed supply plant. Equipment will include a 100-h.p. hammermill, a five-ton mixer and a corn blower.

Wheat, Safflower Oil Meal Tested In Beef Rations

NORTH PLATTE, NEB. — Wheat is worth 15 to 23% more on a bushel basis than corn for fattening steers and safflower oil meal pellets have only a slightly lower feed value than soybean oil meal pellets under certain conditions, according to recent studies at the North Platte Experiment Station of the University of Nebraska.

James C. Adams, station superintendent, reported on the wheat feeding experiment at the annual Feeders Day held here recently.

"There was no appreciable difference in gains whether the wheat was cold rolled or steam rolled," he said. "Wheat contains more protein and less vitamin A than corn. Studies showed that gains using prairie hay as a roughage were slower than when corn silage and alfalfa hay were used."

The three-year study on wheat involved 300 steers and was conducted in cooperation with the Nebraska Wheat Commission and the University of Nebraska Agricultural Experiment Station.

Guy Baker, a member of the station staff, reported on the study involving safflower oil meal pellets as a protein supplement for growing calves.

The study showed that safflower oil meal pellets have only a slightly lower feeding value than soybean oil meal pellets, at the same total weight, when fed with a low energy, relatively high protein roughage.

In another phase of the trial, safflower oil meal pellets were fed at the same protein level as soybean meal pellets. When fed with a low energy, relatively high protein roughage, the extra energy from the safflower oil meal pellets did not replace enough prairie hay to justify feeding at the higher level, Mr. Baker said.

When fed with silage as a roughage, the safflower meal or combination of protein supplement apparently did not have the feeding value of soybean oil meal pellets, he said.

D. Murray Danielson, a member of the station staff, said plans are being developed to start a disease-free hog production program in an effort to stamp out atrophic rhinitis and virus pneumonia. It is hoped that the disease free pigs will make possible more accurate research in feeding, nutrition and management studies, he said.

New Processing Plant

ROSE HILL, S.C.—Approval of a $250,000 loan by the Small Business Administration has opened the way for a new poultry processing plant to be constructed here. Dallas Herring, Rose Hill, vice president of the Farmers Industrial Development Corp., which will build the plant, said it will have a capacity of 200,000 broilers weekly. The plant will be leased to E. T. Watson, operator of the Watson Seafood Corp., Raleigh. In addition to the small business loan, the corporation raised $80,000, and secured another $27,000 from a bank.

Roller Chain Model Horizontal Pellet Cooler produced in 10 sizes in both single stage and two stage coolers.
SETTING New Standards for the Industry in Liquid Feed Mixing, Pelleting and Cooling Equipment. Wenger Engineered for Progress. For Improving Quality, Production, Sales and Profits—Why Go Halfway—Go Wenger!
Multi-Duty Pellet Mill. 50 HP and 100 HP sizes for finest quality Hard Pellets, Wengerblended Mash Feeds and (optional) Hi-Molasses Pellets. A full line of feeds from a single piece of equipment.
Hi-Molasses Pellet Mills. 50 HP and 100 HP sizes. For production of beef and sheep supplements with 25-50% molasses.
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1250 Series Mixer. Capacities on liquid mixing to 60 tons per hour. Two smaller sizes available.
Multi-Blenders. For individual or simultaneous application of several liquids. Available in 3 sizes, capacities to 60, 20 and 10 tons per hour respectively.
Liquid Conditioning Feeders. For molasses, fats and fish solubles.
Molasses Feed Mixers in 4 sizes with hopper bin model feeders.
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Inclined Belt Conveyors. For hot pellets, cooled pellets and crumbles, or molasses mash feeds.
Dressers and Blenders. 4 sizes with capacities of 10, 20, 40 and 60 tons per hour.
Metered Flow Pumps. 2 sizes in Bronze (molasses or fish) and Iron (fats).
Designed today to meet tomorrow's production problems. Wenger Pellet Mills, Coolers and Liquid Mixers insure top capacity, top quality and a size for every requirement. Designed and built to Wenger's famed standards of the finest materials and engineered to minimize labor, equipment costs and contamination hazards. Wenger equipment is designed for the mill which wants a real return from every dollar invested.
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Tell Reasons Why Hay Pellets Give Improved Results

URBANA, ILL.—Some answers to the question of why pelleted hay produces improved results in feeding beef calves were provided in the spring issue of Illinois Research, a publication of the University of Illinois.

The "whys" of the increased efficiency in experimental tests were discussed in an article, "Pellets for Profit in Feeding Beef Calves," by the authors, Dr. A. L. Neumann, professor of animal science; R. J. Webb, experiment station superintendent, and Prof. G. F. Cmarik.

These reasons include:

● "When animals consume an extra amount of hay as the result of pelleting, the energy supplied by a ration may be increased almost as much as when a concentrate, such as corn, is added. Pelleting of hay probably does not increase the animal's capacity for roughage, at least not greatly. The increased intake is probably due to a more rapid passage rate from the rumen or paunch. Studies at other stations have shown that ground hay remains in the paunch a shorter time than long hay.

● "In our studies it was observed that calves on pellets seldom ruminated. The fact they spent less muscular energy in rumination may account for some of the improved feed conversion. The energy furnished by the electric motor which drove the machinery for the pelleting process was probably cheaper than the energy from feed that steers used in ruminating long hay.

● "Simply chopping the roughage without pelleting increased neither feed intake nor gains, nor did it alter feed conversion. The favorable results, thus, cannot be attributed to grinding or chopping alone. In fact, earlier work at Illinois has shown that fine chopping reduces digestibility of roughages by ruminants. This is probably because the fine particles leave the paunch before they are fermented by bacteria, or perhaps because some of them bypass the paunch completely.

"Perhaps the pelleting process insures that the feed goes into the paunch and also makes possible the bacterial breakdown of crude fiber in short order."

Guest phoning down from his hotel room: "Is this the desk clerk?"

Clerk: "Well, what's eating you now?"

Guest: "That's what I'd like to know."

◆ ◆ ◆

Bars are something which, if you go into too many of, you are apt to come out singing a few of, and maybe land behind some of.

◆ ◆ ◆

Bill: "I understand Harry has a cold. What did they do for him?"

Phil: "They prescribed a jigger of bourbon and two aspirins every night. His wife told me this morning that he's three days behind on the aspirin and three years ahead on the bourbon."

◆ ◆ ◆

An elderly retired couple from a remote town was visiting New York for the first time. The sights seemed to interest the old gentleman more than his wife, who finally exclaimed, "John, the way you stare at these city women is something scandalous! A body'd think you'd never seen legs before."

"Well," John mused, "that's what I was thinking myself."

◆ ◆ ◆

The little girl was entertaining visitors until her mother was ready. One of the ladies remarked to the other with a significant look, "Not very p-r-e-t-t-y," spelling out the word.

"No," answered the child, "but awful s-m-a-r-t."

◆ ◆ ◆

A man and his small son were standing in front of a lion's cage at the zoo.

Suddenly the little tyke asked: "Daddy, if that lion gets out of his cage and eats you up, what bus should I take home?"

◆ ◆ ◆

He was driving the wrong way on a one-way street after "just two drinks with the boys" when a cop stopped him and asked, "Where do you think you're going?" "I don't know," was the reply, "but I must be late—everybody's comin' back."

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who have done so much, through research, for the Poultry Industry. They have given us better formulas with resultant lower feed costs per dozen eggs; lower mortality; and have backed the Quality Egg Program from the start. *QUALITY FEED - - PROFIT PARTNER TO THE GHOSTLEY PEARL.*

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A NEW STABILIZED AND HIGHLY ACTIVE BACITRACIN FOR THE FEED INDUSTRY

GP - Bacitracin is a thoroughly tested product of 3 years' experimental research on the farm as well as in the laboratory.

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Increased Consumption Of Eggs Urged to Boost Prices in New Jersey

TRENTON, N.J.—Following a review of the economic recession in the market for fresh table eggs, New Jersey's principal farm product, the state's board of agriculture has urged the food trade and consumers to help ease the situation by increasing egg consumption "for economic and patriotic as well as nutritional reasons."

"We could eat our way out of this problem," said Michael J. Klein, Clifton, board director, "if every family purchased and ate an extra dozen eggs per week."

Phillip Alampi, state secretary of agriculture, also made a plea for egg industry help.

Promotions Initiated

In addition to sizing up the problem, the state board heard reports on several activities designed to help alleviate the poultrymen's distress.

Chain stores and other large buyers of eggs were asked to set up in-store promotions and to include eggs in their advertising to remind housewives that eggs are a most economical food buy.

Jersey Egg and Poultry Producers, Inc., using funds contributed by feed dealers, hatcherymen and other allies of the poultry farmer, scheduled special advertising.

The advertising program of the New Jersey Poultry Products Promotion Council was accelerated and concentrated upon the theme "Eggs Are Your Best Food Buy."

Mr. Alampi conferred in Washington with Secretary of Agriculture Benson and other officials of the U.S. Department of Agriculture about government purchases of eggs.

Preliminary results of a study of 229 New Jersey "family size" poultry farm operations during calendar 1958 were reviewed. This review showed that farmers with fewer than 2,000 layers lost 90¢ per layer. The best income (80¢ per layer) was reported for flocks of 4,000-5,000 birds operated without hired labor.

The wholesale market for large New Jersey white eggs broke below 30¢ doz. April 8, and hit a low of 27½¢ the week of April 19.

ADM Expands Grain Storage in Minnesota

MINNEAPOLIS — Archer-Daniels-Midland Co., Minneapolis, has announced a 1 million-bushel expansion of its country elevator grain storage facilities in Minnesota.

L. J. Weidt, manager of ADM's Commander elevators, said the expansion program will include additions to 20 of the company's 38 country elevators in the state. The expansion will involve erection of 102 steel storage tanks of 9,700 bu. capacity each, he said.

Locations where these will be placed and the increased capacity planned for each are:

Bellechester, 38,800; Elko, 38,800; Faribault, 38,800; Garden City, 97,000; Janesville, 58,200; Judson, 38,800; Kilkenny, 38,800; Lake Crystal, 58,200; Lewisville, 58,200; Lonsdale, 38,800; Morristown, 38,800; Mountain Lake, 58,200; Randolph, 38,800; St. Charles, 77,600; St. Clair, 48,500; St. James, 48,500; Truman, 19,400; Waterville, 19,400, and Windom, 97,000.

With this expansion, Mr. Weidt said, the firm will have about 81 million bushels of storage throughout the country.

Work has also begun on rebuilding the workhouse and other facilities at the Montgomery, Minn., elevator which were destroyed by fire earlier this year.

A 2½ million-bushel addition to the firm's Tacoma, Wash., terminal elevator now is nearing completion. Last fall ADM added 1,130,000 bu. of storage space at its Soo Elevator in Minneapolis and 1,113,000 bu. at the Evendale, Ohio, soybean processing plant.

ADM operates 156 plants, elevators and mines.

Maine Firm Sold

FREEPORT, MAINE — Freeport Grain Co. has been sold by George V. Hunter, Maine radio and television farm news commentator, to James J. Kelley, owner of the Freeport Fuel Co. The business will be known as the Freeport Fuel & Grain Co. Arthur Palmer is manager. Mr. Hunter will continue his dairy farm at Durham, Maine, and his radio and television work.

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FISH SOLUBLES
WITH MINIMUM 25% FISH GLANDULAR AND LIVER HYDROLYSATE ADDED
+ the Plus Factors
GUARANTEED "ALL YEAR" SUPPLY
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UNIDENTIFIED FACTOR(S)
(Plus Dozens of Known Factors)
PUTS POWER IN DEHY

While man-made satellites and inter-space missiles sweep billions of miles into Infinity, scientists remain baffled by the miracle growth powers in DEHY (dehydrated alfalfa or grass).

We don't know what it is, but we know what it does...

Scientists agree that Dehy contains an unknown factor essential for optimal growth and reproduction. In a recent report on a least-cost broiler formula, Hutton and others (ARS, USDA) took note of the value of alfalfa meal as a source of an unknown growth factor by specifying a minimum level of 2% *regardless of cost*. Other tests have shown the existence of an unknown factor in Dehy which is essential for *maximum hatchability*. (Touchburn, Poultry Sci. 36:591, '57)

The challenge of the unknown remains, but this we know . . .

Scientists agree that Dehy is an economical source of vitamins A, E, and K, riboflavin, and particularly xanthophyll. Ferguson and others at Texas A & M calculated that 5% of Dehy added $10.08 worth of xanthophyll to 100 lb. of one diet at a cost of 94c.

For a better, low cost POWER PRODUCER—in all your poultry feeds—use DEHY.

Dr. H. R. Bird, University of Wisconsin, in answering the question, "Why Feed Alfalfa Meal to Chickens?", had this to say, "If alfalfa meal supplied only one useful nutrient, it would be easier to answer the question. Because it supplies several, there are several good reasons for using it and they all add up to more economical conversion of feed dollars to product dollars."

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Board of Trade Building, Kansas City 5, Mo.

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The most digestible calcium product on the market is EGGSHELL BRAND Oyster Shell. This heat-sterilized soft, reef shell is highly palatable to hens . . . goes to work turning out sturdy egg shells in less than 6 hours after consumption. Tests show it makes stronger egg shells.

SWELL!

High-producing layers need as much shell as they'll eat. That's why we recommend palatable, soft, reef shell. Even ordinary hens eating 4 lbs. of shell a year can produce as many as 24 extra fine-shelled eggs. Poultrymen prefer them because hens prefer them.

SELL!

There's only one best-seller in the Northeast, and that's EGGSHELL BRAND Oyster Shell. It outsells any other shell or calcium substitute. This sales leader is promoted in the trade publications and backed by merchandising aids that really do the job.

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a product of
OYSTER SHELL CORPORATION
BALTIMORE, MARYLAND

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Poultry Plant Planned In Forest, Mississippi

FOREST, MISS. — By a vote of nearly 4 to 1 Forest citizens have approved a $500,000 bond issue which will be used to finance the site and building for Southeastern Hatcheries, Atlanta, Ga., operated by Ray Fechtel.

The new poultry industry, which will be the fourth to locate in Forest, will occupy an 11-acre tract of land. The city had obtained an option on the land pending outcome of the election.

The new plant will have a capacity of 500,000 broilers per week.

Forest has three other processing plants, the Cudahy Packing Co. built six years ago with a bond issue of $150,000, the Gaddis Packing Co., and the Forest Packing Co., which started operations a few weeks ago. Each of the other three plants has a capacity of 125,000 per week.

R. A. McAuliffe, Jr., Forest manager of Southeastern Hatcheries, said plans for the new building have already been drawn up. This firm has operated for many years in Forest and Morton, and the company also owns Morton (Miss.) Broiler Farms and the Dixie Broiler Farms of Mendenhall, Miss.

Mr. Fechtel has 14 different units operating in the southeastern states, and also has a processing plant in Cullman, Ala.

Safeway Gives National Support to PENB Plan

OAKLAND, CAL.—The long-range set-aside plan for financing consumer information services of the Poultry & Egg National Board received a shot in the arm recently from egg producers serving Safeway Stores, Inc.

Approximately 6,000 producers who market through the food chain began on April 20 a voluntary investment of 1¢ per 30-doz. case sold, L. N. Hoopes, dairy and egg division chief, and A. V. Scollard, egg department manager of the nation's second largest food chain, announced.

Seventeen egg grading and distributing plants in 12 states come under the program.

With a majority of the chain's producers favoring the plan, nearly $40,000 a year can flow to PENB, Mr. Scollard estimates. Four months ago, the chain conducted a test program among 200 shippers marketing through plants at Emeryville and Fresno, Cal.

"Enthusiastic producer response to the simple financing methods at a modest membership rate, adopted by PENB and patterned after the successful fund-raising plan of the American Dairy Assn., convinced officials they could anticipate ready acceptance of the plan nationally," Mr. Scollard said.

USDA Reports on New Pea Aphid Insecticide

WASHINGTON — Fumes from granules of a new organic phosphorus insecticide killed all pea aphids on alfalfa when applied broadcast to the soil surface of small experimental plots at the rate of 2 lb. per acre, the U.S. Department of Agriculture has announced.

USDA said these observations are preliminary, however, and further experimentation will be necessary before the treatment can be recommended for aphid control.

Although the new insecticide, called Thimet, was intended for use as a systemic, it was observed that fumes of the chemical in granular form at 2% concentration proved sufficiently lethal under outdoor conditions to kill aphids as long as 10 days after application.

STILL ON THE ADVANCE . . .
THE B&L COMPLETE MOBILE FORMULA FEED BLENDER
Offering Unmatched Maneuverability and Ease of Operation!

B&L

Here's the modern mobile feed plant that grinds, mixes, and blends — produces any formula feed right at the barn door. It carries a full day's supply of molasses and supplement, and features micro-ingredient supplement and medicant mixing . . . high speed molasses blending. Top quality feeds from farm grains and roughages.

STANDARD EQUIPMENT ON THE B&L FORMULA FEED BLENDER — The first practical mobile baled hay grinder grinds round and square bales with equal ease.

- GRINDS WHOLE BALES WITH NO EFFORT
- LARGE FEED TABLE — 30" ABOVE GROUND
- POWER DRIVEN GATHERING FINGERS
- VARI-SPEED FEED DRIVE
- COMPLETELY ENCLOSED WHEN NOT IN USE
- NO EXTRA POWER NEEDED
- UTILIZES FULLEST EQUIPMENT EFFICIENCY

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With DPL vaccines you can combine proven safety with a convenient speedy application to suit your particular needs. Whether you prefer the water, the spray, or individual application, whether you need protection against one disease or many, Delaware Poultry Laboratories have both the right vaccine *and* the most convenient method for you. *If you fill in the questionnaire below, we will be glad to help you find the right DPL program for your operation.*

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These same purchasing agents can always depend on the uniform high quality and stable price of POLLYPHOS . . . as phosphorus and calcium ingredients . . . in their formula feeds. Its phosphorus content is 19% or above . . . with a minimum of 32% – maximum 35% calcium and no more than 0.19% fluorine. Also . . . POLLYPHOS can be delivered to you at a low net cost.

Phone, wire or write us concerning your phosphorus needs. Let us acquaint you with the cost-cutting advantages that POLLYPHOS can provide you with . . . in bags, or in bulk, or in truck or carload lots. It will cost you nothing to find out.

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UP OR DOWN

By Dr. Leonard W. Schruben, Agricultural Economist, Kansas State College

Changes in Chicken Numbers

The number of chickens on farms Jan. 1 is now back to the 1920 level. Just under 4 million were recorded as of Jan. 1, 1959. This is on a par with 1920 and the late 1930's. These changes are shown in Exhibit 1.

Peak numbers of record were reached in 1944 when 580 million chickens were on farms in the U.S. on Jan. 1. This number does not include commercial broilers.

Chicken numbers are down from 1944. But what a difference in what those chickens are able to do. For example, last year laying flocks on farms in the U.S. produced 60 billion eggs. In 1944 they produced 58 billion eggs. In 1958 the average layer provided 198 eggs. In 1944, she laid 148 eggs.

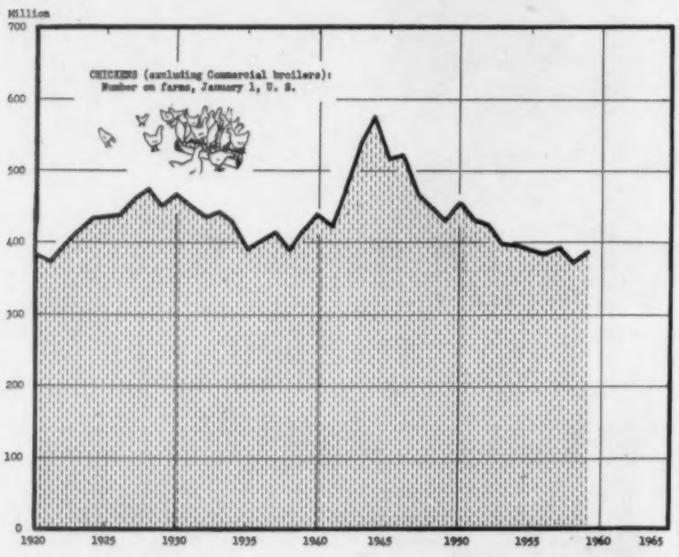
Not only does today's chicken produce more eggs per year, but she does it on fewer pounds of feed. This represents a remarkable achievement in efficiency. Just picture for yourself what an achievement this is the next time you fill the gas tank on your automobile. Suppose your mileage per gallon had increased the same percentage as the number of eggs you get from 100 lb. of feed.

What does this mean to the feed dealer? Many people including this writer would like to know. Readers of this column understand that no one as yet has found a formula for predicting the future accurately and no claim is made here. Nevertheless, planning decisions must be made in light of presently-known facts and resources committed to carry out those decisions.

It would appear that the trend or improved feed-egg conversion efficiency will continue. While a substantial share of eggs is now being produced on manufactured feeds, there probably is some small remaining growth potential in this regard.

Offsetting this potential from a tonnage volume basis will be a reduction in the number of pounds of feed required per dozen eggs. The drive will be to match management efficiency of the egg producer and his feed. If the limiting factor is management there is little use of providing high efficiency feed. Producers will become increasingly conscious of least-cost rations per dozen eggs produced as contrasted to low price per ton of feed.

EXHIBIT 1. Chickens (excluding commercial broilers), number on farms, Jan. 1, 1920 to date.



Sioux, Koyker List New Products, Personnel

MINNEAPOLIS—Max L. Rysdon, president and general manager of the Sioux Steel Co., Sioux Falls, S.D., and its subsidiary, the Koyker Manufacturing Co., Hull, Iowa, has announced that R. A. Rodgers, formerly with the Pacific division of Minneapolis-Moline Co., is now sales manager of the Sioux Steel Co. In this capacity, Mr. Rodgers will supervise sales and advertising promotion for Sioux and Koyker.

Lloyd Lagemann continues as general sales manager for both companies. Bernie Wolfswinkel has assumed the duties of office manager at Koyker.

Mr. Rysdon reported that Sioux, maker of steel grain storage buildings and bins, is expanding its building division, with enlargements in the "Sioux-Tite" straight sidewall building line introduced in 1958. In addition, Sioux has begun delivery of commercial-size grain tanks and center-draw bulk feed bins. Side-draw models are being designed.

Koyker has announced the availability of a new horizontal auger for use in loading grain storage buildings. It is an adaptation of the auger and other components of the Koyker 7½ in. and 10 in. auger elevators.

Mr. Rysdon said sales figures for both Sioux and Koyker were ahead of 1958, a record year. Koyker sales were reported almost doubled in 1958, the first year of Sioux ownership.

New Feed Plant

WEISER, IDAHO — Valley Milling & Produce, Inc., has been incorporated, listing $300,000 capitalization, to operate a livestock feed processing plant.

Craig Rowan heads the new corporation as president; Dave Campbell, New Meadows, is vice president, and Robert Hall, Boise, is secretary-treasurer. On the advisory board are William M. Carson, Floyd Stoneman, Kenneth Steck, Douglas McGinnis, Kent Power, Robert Stout and Robert Walker, all of Weiser, and Dan Dymoke, Midvale.

Columbus Co-op Plans Expansion in Alfalfa

COLUMBUS, OHIO — Ralph D. Maby, experienced in the agricultural chemical and dehydrating fields, has joined the staff of the alfalfa marketing division, Farm Bureau Cooperative Assn., Inc., Columbus, Ohio, as an assistant to the division manager, E. A. Mengering.

Ralph D. Maby

Mr. Maby will work in all phases of the association's expanding alfalfa program, with particular emphasis on: "Grower relationships with view to improving quality and yields of alfalfa acreage, improvement of existing processes and development of new processes and products and all phases of sales contact work and customer relationships."

Mr. Maby is a 1939 graduate of Purdue University. His professional experience includes six years as chief chemist for the Cincinnati division of the Tennessee Corp.; three years in soil, plant and animal nutrition research for Brookside Farms, and nine years with Bremco Alfalfa Mills.

Mr. Mengering said the Farm Bureau co-op has a number of research projects under way "which promise some startling advances in product improvement and cost reduction."

Feed Man Honored

OKLAHOMA CITY, OKLA.—B. D. Eddie, president and general manager of Superior Feed Mills here, has been presented a plaque of appreciation for his recent gift of a $40,000 '89er bronze statue depicting a boy on a horse and a man staking out a claim. Mr. Eddie presented the statue to the '89er Assn. which includes among its members persons who made the run at the first opening of Oklahoma territory April 22, 1889, and their descendants. The statue will be formally placed in the Oklahoma Art center in 1960.

U.K. Feed Output Hits All-Time Peak

LONDON — Output of compound animal feedstuffs in the United Kingdom last year amounted to an all-time record of 7.18 million long tons, according to statistics issued by the Compound Animal Feeding Stuffs Manufacturers National Assn.

Production was 13% higher than in 1957 (6.34 million tons) and 8% higher than 1956 (6.65 million tons) the previous record year.

The association said the increase was spread over all the main types of feed. Among the larger production lines cattle feed showed an increase of 13.6% to 2.3 million tons. Pig feed increased by 8.2% to 1.7 million tons and poultry feed was up 14.8% to 2.9 million tons.

AT NEBRASKA CONVENTION — Nebraska Grain & Feed Dealers Assn. members found time to visit with their fellows in the trade during a social hour held as the final event of the recent association convention held in Omaha. Here are a few informal pictures snapped during the hour. (All are identified from left to right.) First picture—John Marley, Nixon & Co., Omaha; Wilbur L. DeVan, DeVan Brokerage Co., Omaha; Robert E. Kunze, Kraft Bag Corp., Kansas City. Second picture—Leo Johnson, assistant secretary, and Howard W. Elm, secretary, Nebraska Grain & Feed Dealers, Lincoln. Third picture—Ralph Beermann, Beermann Bros. Dehy, Dakota City, Neb., president of the American Dehydrators Assn.; Don Hoffman, Lincoln (Neb.) Elevator & Feed Co.; Gordon Erickson, Mid-States Construction Co., Omaha. Fourth picture—Gib Wood, Calcium Carbonate Co., Omaha; Mrs. Ray Carnes, Miller Chemical Co., Omaha; Harry B. Chronister, Jr., Wagner Mills, Inc., Schuyler, Neb.

This 100 pound container of
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hetrogen
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Menadione Sodium Bisulfite
will provide positive vitamin K fortification to 400 tons of your poultry feed for only 4½c per ton
Hetrogen K provides rapid, highly effective protection against hemorrhagic disease. It is the best buy for convenient Vitamin K fortification of your poultry feeds. Assured maximum stability. Economically priced, too! Also recommended for medication of drinking water, Hetrogen K is available as a free flowing concentrate. Write for full data.
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Letters to the Editor

Flavors

Chicago

To the Editor:

The article written about flavors by Prof. Morley Kare of Cornell which recently appeared in your magazine (Feedstuffs, March 28) is a well written article concerning some recent tests conducted by Prof. Kare in which his findings have verified some of our early concepts.

We of Taste Engineering have for some time frowned upon the use of artificial fruit flavors such as grape, cherry, strawberry, etc., when used as solo flavors in feeds.

We have for some time worked on the theory of taste instead of aromatizing the feed for the buyer, because taste is the first sense developed in animals. We approach each feed problem with a very open and practical mind, using very basic common sense. Our taste materials, or as we still call them on our literature, flavors, are designed to do certain basic things to the feeds depending upon the feed formulation. Since the nutritionist, guilding the feed manufacturer, builds into that particular feed the nutrition the animal will need for growth, reproduction and disease-free health, on a daily intake basis, I personally believe that because of chemical changes that take place or because ingredients change in palatability from source to source, crop to crop and season to season, proper taste/flavors can be used in feeds to assure that the animal or fowl will receive this nutrition on a more constant daily level. This is what the feed manufacturer wants. This is what the farmer wants. Flavors are not miracle products, but when used in the above manner, are beneficial.

In summarizing, let me state that we are in whole-hearted accord with the findings of these tests by Prof. Kare. Our only area of disagreement is in the method of testing. We do not believe in free-choice testing, but rather in segregated testing, as this method actually approaches farm conditions and gives results we can duplicate in the field.

Norman K. Stanton
Vice President
Taste Engineering, Inc.

FEED FIRM SOLD

WABASSO, MINN.—The Wabasso Grain & Feed has been sold to Leonard Goblirsch and L. G. Goblirsch by Mrs. C. J. Mahal whose husband established the business in 1943.

David Hopkins Named To A. E. Staley Post

DECATUR, ILL.—Appointment of David J. Hopkins as administrative manager in its formula feeds department has been announced by the A. E. Staley Manufacturing Co., Decatur.

David J. Hopkins

E. E. Rhodes, manager of the company's soybean division, said Mr. Hopkins will supervise procurement and inventories, order handling, dealer counseling and coordination with manufacturing and other departments in his new position.

Mr. Hopkins has been grain buyer in the grain division.

He attended Southern Illinois University, Carbondale, was a pilot in the Naval Air Corps during the war, worked at Staley's in various plant jobs while studying at Millikin University, Decatur, after the war, and joined the company as supervisor of placement in the personnel division in 1949 on graduating from Millikin with a degree in business administration.

He went to the grain division as senior grain clerk later that year, became assistant grain buyer in 1953 and has been grain buyer since 1956.

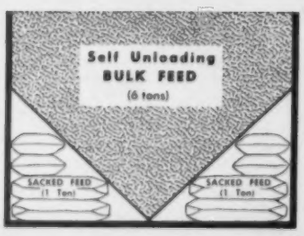
Animal Industry Event Scheduled in Oregon

PORTLAND, ORE.—The 18th annual Oregon Animal Industry Conference, sponsored by the Oregon Feed & Seed Dealers Assn. and Oregon State College, will be held February 4-5, in Withycombe Hall, on the OSC campus.

Announcement of the dates was made jointly by Randall (Bud) Cook, association chairman, and Dr. Jesse Parker of the college. Theme of the 1960 conference will be "dairying," and the two committees will meet in the immediate future to consider speakers and program.

A New Design
ON THE HORIZON . . .

SIMONSEN'S
Self-Unloading
BULK AND SACK
V-60
FEED BODY



It combines bulk and sack delivery — WITHOUT shoveling — all hydraulically and automatically operated from a handy control panel at the front.

The new Simonsen V-60 is the Feed Dealer's complete answer:

- Hauls 6 tons of bulk feed in two V-shaped bins which unload completely with hydraulically controlled augers. (Can be ordered with three compartments if desired.)
- Also hauls 2 tons of sack feed at the same time in weather-protected side compartments (utilizing space normally wasted in all-bulk feed bodies).
- Hydraulically powered delivery auger swings a full 270 degree to almost any unloading position — and will reach 21-foot bins.
- Variable speed bottom auger allows driver to select unloading speed best suited for type of feed.
- All hydraulic controls located on handy panel at front of body—just outside truck cab door.

This 12-foot combination feed body will make any feed delivery task easier and faster — gives you more opportunity for profit. And the successful background of Simonsen research — plus time-tested equipment now used by many satisfied feed dealers insures you years of trouble-free feed hauling.

The 3,800-pound V-60 — the Rolls Royce of bulk and sack feed bodies — can be mounted on your truck without welding or drilling. Your choice of colors at no extra cost.

Why not step up to feed delivery automation! Mail this handy coupon today to get the full story, prices and specifications of the V-60 —the new shape in bulk and sack feed delivery.

MAIL THIS COUPON TODAY

Yes, I'm interested in the full story of the V-60 combination self unloading bulk and sack feed body. Send price, literature and specifications to:

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It's DANNEN for GRAIN and FEED INGREDIENTS

- Bran
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- Soybean Oil Meal
- Meat Scraps
- Sugar
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OFFER HIM HELP HE WON'T FORGET

(THE SHEEPMAN WHO THINKS "SALT IS SALT")

REMIND HIM TO ORDER MORTON T-M SALT. Even though salt is a small part of his feed bill, Morton Trace-Mineralized Salt helps increase feed efficiency so all his feeds do a better job. He'll appreciate your reminding him—and he'll be back regularly to do more business with you. What's more, Morton T-M is a quality product you can recommend with confidence to any livestock producer. It is a profitable item backed by strong promotion that helps make it sell easily.

TO ADD MORTON T-M SALT TO YOUR LINE, JUST WRITE MORTON SALT COMPANY, CHICAGO 6, ILLINOIS

MORTON TRACE-MINERALIZED SALT

PILLSBURY SALES SCHOOL—A sales training school was held recently in Atlanta, Ga., by the feed division of the Pillsbury Co. under the supervision of Frank J. Steinmetz, director, personnel and training, and Eugene Spencer, training manager. In attendance at the three-day meeting were (left to right):

Front row—W. A. Mixon, Cairo, Ga.; Junior Akridge, Cairo, Ga.; Harvey Moss, Henderson, N.C.; Ronald Smith, Henderson, N.C.; Robert V. House, Robersonville, N.C.; Wanzer Ward Daniel, Talbotton, Ga.; W. E. Nicks, Nashville, Tenn.; Wallace Conner, Nashville, Ga.; Fred Nobles, McRae, Ga.; Willie Nobles, McRae, Ga., and L. D. Scott, Claxton, Ga.

Second row—Ed Burgess, Cairo, Ga.; James Lindsey, Tifton, Ga.; G. A. Bradley, Camilla, Ga.; Robert E. Henderson, Greenville, S.C.; Johnnie Giles, Catsula, Ga.; Henry Mardis, West Somerset, Ky.; Charlie Moncus, Dawson, Ga.; Robert D. Puckett, Blakely, Ga.; Bill Sorrells, Hahira, Ga., and M. H. Elder, Jr., Senoia, Ga.

Back row—Emmett Ezell, Cairo, Ga.; Fred Long, Albany, Ga. (Pillsbury territory manager); Linville Tarter, West Somerset, Ky.; D. Harold Bailey, Walstonburg, N.C.; Cecil V. Hill, Adel, Ga.; Fred Carnahan, Goodlettsville, Tenn.; Earnest Dee Revills, Adel, Ga.; Bob Greer, Goodlettsville, Tenn.; Lawrence O. Way, Jr., Holly Hill, S.C.; Frank J. Steinmetz, Clinton, Iowa; William Byram, Decatur, Ga. (territory manager); C. M. Goare, Dawson, Ga.; Harmon Caver, Statesboro, Ga. (territory manager); Eugene Spencer, Clinton, Iowa, and Horace Thomas, Hahira, Ga.

Ft. Worth Exchange Elects New Officers

FT. WORTH, TEXAS—The Ft. Worth Grain Exchange elected officers for the coming year at its annual meeting held recently. W. L. Newsom, Jr., Kimbell Milling Co., was elected president.

Other officers elected were as follows: Paul Allison, Paul Allison Grain Co., Inc., vice president; James F. Meyers, Interstate Grain Corp., treasurer, and E. B. Wooten, secretary. Mr. Wooten was reelected for his 51st term.

Directors named were Frank A. Bailey, Jr., Frank Bailey Grain Co.; Jack N. Greenman, Uhlmann Elevators Co.; Chas. M. Little, Jr., Blewett-Little Grain Co.; James F. Meyers, Interstate Grain Corp., and Mensing West, Terminal Grain Co.

The report of the inspection department for the year ending March 31, 1959, showed total grain inspections (in and out) of 85,934 cars, compared with 68,228 for the same period one year ago and 54,795 cars two years ago.

Inbound wheat inspections were 28,893 cars, compared with 16,095 for the previous year, and inbound grain sorghums inspections were 14,689 cars, compared with 14,549 for the previous year and 6,998 two years ago.

Vermont Unit Rejects 'Annual Inventory' Tax

MONTPELIER, VT.—A bill in the Vermont Senate which would have shifted the basis for local taxation of stock-in-trade from an April 1 valuation to an annual inventory system was voted down by a wide margin recently.

The vote was against the measure despite a charge by one of its leading supporters that such action had the effect of giving feed dealers, as well as coal and oil dealers, "a local tax exemption."

The major objection to the measure, which was killed by a vote of 22 to 6, was its failure to offer a formula to appraise property on an average inventory basis or to define the meaning of an annual average inventory.

Opponents of the bill said it would work a hardship on feed firms and other businesses which carry a large inventory through most of the year, but are able to cut them down by the April 1 deadline under which they now pay the local tax.

REPORTS SALES, EARNINGS

NEW YORK — Commercial Solvents Corp., New York, reported recently that for the quarter ended March 31, 1959, the company had consolidated net earnings of $665,680, equal to 24¢ share on 2,741,422 shares of common stock. Sales for the quarter were $15,787,406. During the same quarter of 1958, the firm had sales of $13,294,254 and net earnings of $357,271.

Treasurer of Toledo Board of Trade Dies

TOLEDO—Paul M. Barnes, 72, treasurer of the Toledo Board of Trade since 1943, died April 21. Mr. Barnes was manager of the Toledo branch of the Lansing Grain Co. the past 23 years.

Mr. Barnes worked for the Wabash Railroad Co. as an accountant, the Jesse Young Grain Co. as a buyer, and the Toledo Grain and Milling Co. as purchasing agent before opening the Lansing office here in 1936.

Mr. Barnes became a member and a director of the Board of Trade in 1918, and its treasurer and representative to the Chicago Board of Trade 25 years later.

Southern Co-op Buys 2 Grain Facilities

RICHMOND, VA.—Two grain handling facilities in northern Virginia were recently purchased by Southern States Grain Marketing Cooperative, according to an announcement in the co-op's publication, Service Guide.

The plants, one at Kinsale and the other at Urbanna, were formerly owned by the Norris Grain Co. The new owners estimate that, together, the two units can handle a million bushels of grain annually.

EVOLUTION OF FEED HANDLING

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Opportunities, Risks in Growing, Selling And Buying Replacement Pullets

By John P. Weeks
Cosby-Hodges Milling Co.

EDITOR'S NOTE: This article by John P. Weeks, vice president-director of research and education, Cosby-Hodges Milling Co., Birmingham, Ala., is from a talk he gave at the recent Commercial Egg Short Course conducted at the University of Georgia. Mr. Weeks' comments are drawn from experiences with Cosby-Hodges' replacement pullet program, which was begun as a service to its customers four years ago. He reports that now many of the producers using the service have large laying flocks with no brooding or growing facilities on their farms.

The business of producing and selling replacement pullets is here to stay. It is another step of specialization in an already highly specialized poultry industry. Present day replacement pullet growing is a long way from the program followed a few years ago, when the hatcheryman crowded his surplus chicks in a barn or hen house and sold them for whatever he could get out of them at any age.

Hundreds of thousands of pullets are now produced annually on specialized pullet growing farms. In the Cosby-Hodges Milling Co. program the pullets are grown on clean, isolated farms by growers who have no other poultry. Only one age bird is kept on each farm. The birds are well bred, properly fed, vaccinated and managed. The pullets are better than most of the egg producers ever grew on their own farms. Similar plans are being followed by several replacement pullet growers in the Southeast and other areas of the country.

We of Cosby-Hodges Milling Co. started promoting the replacement pullet program as a service to our customers four years ago. Many new producers borrowed money to build cage laying houses. They grew their first pullets in the laying house, then had no place to grow future replacements. We planned for specialized farms to grow pullets for several of these people. The program was so popular that we had requests from floor flock owners and established cage flock owners for this service. Now many of the producers have large laying flocks with no brooding or growing facilities on their farms. They depend entirely on our program for their replacement needs. Many problems have been encountered in developing our program, but it has been successful and is continuing to expand in Alabama, Mississippi, Georgia, Florida and southern Tennessee. Several dealers and poultrymen are following our plan.

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discuss opportunities and risks in raising, selling and buying started pullets.

Opportunities—First I will list opportunties for the pullet buyer:

1. Allows egg producers to carry larger laying flocks with uniform labor requirements.
2. Allows full use of all facilities throughout the year.
3. Reduces housing and equipment needs.
4. Can get pullets that were grown on isolated farms away from old birds.
5. Shortens time required for new producers to get in business.
6. Allows more flexibility in replacement programs.

Opportunities for pullet grower and feed dealer are:

1. Can be a profitable enterprise.
2. Reduces lag in replacements during period of low egg prices.
3. Is a good tool to increase feed sales.
4. Can keep production units to full capacity.

Risks — Wherever there are opportunities there are usually risks. Replacement pullet growing has risks for both grower and buyer.

Risks for the buyer are:

1. Poor breeding.
2. Poor management (feeding, disease control, etc.).
3. Introducing a disease to birds already on the farm.
4. Stress of moving birds.
5. New birds not immunized against diseases on the farm.

Risks to the grower-seller are:

1. Normal production risks.
2. Unsold birds.
3. Cancellation of orders.
4. Disease at time birds are ready to move.
5. Heavy capital requirements.

Recommendations — Following are some points that will help reduce risks and help cash in on the opportunities:

Points for buyer to follow:

1. Know the reputation of seller.
2. Know management program followed by grower.
3. Know breeding of birds.
4. Personally examine birds and management program on grower's farm during growing period.
5. Pick up birds at farm in own coops.
6. Plan ahead on replacement needs and schedule growing.
7. Move birds to farm at least four weeks before production starts.

Points for grower-seller to follow:

1. Overcome stigma of past started pullet programs by setting up, following and publicizing a sound management program.
2. Raise only birds of good breeding.
3. Keep pullets as the only birds on the farm (not even one old hen).
4. Keep only one age pullet on farm.
5. Follow a sound vaccination program.
6. Sell most of the pullets before they are hatched.
7. Get a down payment at time of sale at least equal to price of chick.
8. Grow pullets in general area in which they will be sold.
9. Move all birds from farm and thoroughly clean houses before new birds are brought in.

Computer Aiding Milk Producers

STORRS, CONN. — An electronic computer is helping 500 Connecticut dairy farmers make money-saving decisions this year, says Prof. Wilbur R. Hesseltine, agricultural extension dairy specialist, University of Connecticut.

Electronically processed data are telling farmers when to sell low producing cows, how much grain to feed and which cows to use for breeding replacement calves. More than 100,000 cows in the northeast are having their affairs handled by the electronic computer during the trial run of the project this year, Prof. Hesseltine explains. The machine is at Cornell University.

Participating farmers are members of the Dairy Herd Improvement Assn. Project leaders hope that use of the computer will prove successful. Some herd owners have reported feed savings of up to $200 a month when feeding cows according to their needs as calculated by the computer.

The discovery of one "loafer" in a herd would pay the cost of this type of testing program for a whole year, Prof. Hesseltine says.

Machine computations simplify herd records and provide much more information than the old hand calculations. He says some of the most startling results have come in the calculation of feeding needs. By figuring quantities fed, size of cow and the test and amount of milk, the machine suggests how much grain each cow should receive.

Processed data also tells farmers how much milk is produced per acre and per man, the percentage of nutrients the herd gets from each of the various roughages and concentrates, and feed costs for each 100 lb. milk produced.

New Alfalfa Firm

SACO, MONT.—Saco Alfalfa Products, Inc., has been incorporated, listing $500,000 capitalization, by directors Alex Morgan, Hinsdale; Kenneth White, Walter E. Woods, K. F. Jacobson, Dan Broadbrooks, Darrell Mange and Stuart Thompson, all of Saco.

Co-op Patron Dividend Bill Vetoed in Iowa

DES MOINES, IOWA—Gov. Herschell Loveless has vetoed an Iowa legislature bill that would have allowed patrons of state cooperatives, as well as members, to share in patronage dividends.

While advocates of the measure said other states permit this practice, Gov. Loveless stated in his veto message, "This represents an unwise attempt to alter the basic principle upon which agriculture cooperatives were founded by extending to nonmembers the same economic advantages held by members."

INSTALLS MILL EQUIPMENT

IRETON, IOWA—The Farmers Cooperative Assn. here has completed a mill and pellet mill installation, and will mix farmers' grains with concentrates. William Rademacher is manager.

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Adequate Protein Level and Flock Size Among Discussions at Purdue Egg Day

By DAVID D. JACKSON
Extension Poultryman, Purdue University

WEST LAFAYETTE, IND. — Recommendations regarding an adequate protein level for light breed layers and emphasis on the individual's evaluation of his labor as the key point of consideration in determining optimum flock size were heard by more than 300 Indiana poultry producers and egg handlers attending the recent seventh annual Purdue Egg Day here.

Richard L. Adams, graduate assistant, poultry science department, told the group that Purdue research has indicated that a balanced corn, soybean-type ration containing 14% protein is adequate for light breed layers in Indiana. He said that supplementing the laying ration with additional B vitamins above those normally found in the ration "was of no benefit as far as increasing egg production is concerned."

He said the 12% level of protein gave as good egg production as the 14% level with caged layers, but Purdue is not recommending a 12% protein level in the field. "The reason for this," he explained, "is that 12% may be about borderline, and in real hot weather, the hen may not consume enough feed to meet its daily need for protein."

It was noted also by Mr. Adams that in comparing the size of eggs from caged birds with eggs from floor birds, the larger eggs appear in the cages. He said this same observation had been made by other workers.

Flock Size

Dr. R. L. Kohls, Purdue agricultural economist, said the answer to how large a grower's flock should be depends largely upon the value he attaches to his labor. "If labor will otherwise be unused and is therefore relatively cheap, even a small flock may be justified," he said. "If the laying flock must pay or compete for labor, then much larger flocks are called for."

Dr. Kohls' presentation was based on information obtained from a study of 47 laying flocks in northeast Indiana.

He presented the following highlights of a study done by Dr. Ludwig Eisengruber, Purdue agricultural economist:

"1. When all costs are considered —feed, chicks, capital, depreciation and labor — sharply lowering costs occur as flock size increases up to 800. After this size, cost advantages from increasing size level out.

"2. Basically, cost economies are the result of declining labor costs per dozen or per hen. Other cost decreases are relatively small.

"3. Another variable favoring size comes from the market side: Prices received increase with larger volume. These price advantages may accrue from (a) better quality, (b) a greater portion of eggs marketed in high priced periods and (c) bonuses and pick-up savings which may be available only to larger producers.

"4. The average producer at all size levels did not receive any return for his management. Only owners of larger flocks received returns approximating a $2 hourly wage for their labor. The more efficient larger flocks, however, did pay both a wage and some return for management.

"5. The answer to 'how large a flock' depends largely upon the individual's answer to the value of his labor. If labor will otherwise be unused and is therefore relatively cheap, even a relatively small flock may be justified. If the laying flock must pay or compete for labor, then much larger flocks are called for."

Other Talks

Prof. Joe W. Sicer, Purdue extension poultryman, told the group that slat floors, multiple tier roost houses and laying cages "are simply other methods of managing layers." He said there is more variation in returns between different operators using any one of the methods than there is between the averages for the methods themselves.

In his talk, "New Ways to Use Eggs to Increase Consumption," Mahlon C. Sweet, editor of Poultry Processing & Marketing, said, "The egg industry will not grow and prosper—in fact, it will recede in importance—unless and until we offer eggs to the consumers in a greater variety of forms, and these forms must be really convenient to use."

A new feature on the Purdue Egg Day program was a coffee break at which new egg products were displayed.

"Automation in the Egg Business" was discussed by Harry E. Drews, poultry products consultant, Springfield, Mo. Mr. Drews said egg handling plants do not have to be extremely large to be efficient. "Many plants that handle from five to six thousand cases per week do a very efficient job," he said. Pictures of numerous egg handling machines were shown to illustrate the type of equipment that is being used throughout the country. "The most recent electronic equipment employed in the egg industry requires a quality controlled production program to insure the kind of egg needed to use on such machines," Mr. Drews said.

Dr. B. B. Bohren, poultry science department, commented that poultry breeding industry has "changed tremendously" in recent year. He said there are fewer breeders "but they are larger and have a better trained staff resulting in finer layers on the farms." Dr. Bohren further stated that breeders still have prob-

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RESEARCH REPORTS—Discussing research reports presented during Purdue University's seventh annual Egg Day program are (from left): Prof. David D. Jackson, Purdue extension poultryman and Egg Day program chairman; Richard L. Adams, graduate assistant in nutrition, poultry science department; Dr. H. E. Moses, veterinary science department; and Dr. B. B. Bohren, in charge of breeding work, poultry science department.

lems that are being carefully studied at universities and on farms, and this "will result in still better layers in the future."

Disease Research

Poultry disease research was presented by Dr. H. E. Moses, veterinary science department. This scientist pointed out that respiratory diseases of poultry are still one of the major projects at Purdue and at other institutions. "There are many answers needed in these virus studies," he said. "New methods of identification for strains of viruses and other disease organisms will be very helpful in speeding up diagnosis in the future."

Products technology research was reported by Dr. W. J. Stadelman, poultry science department. He discussed the new break-out sampling method to determine egg quality and reported that one Indiana egg handler has been cooperating with the government on the project for about a year. "From observations made it is evident that the younger flocks producing higher quality eggs will require sampling at less frequent intervals than will be the case with older flocks producing lower quality eggs," he said.

Taking part in a panel discussion of "Egging on the Egg Council Program" were Vern F. Steckley, president, American Poultry & Hatchery Federation, Kendallville, Ind.; Carroll Eiler, chairman, Egg Council, Indiana State Poultry Assn., Warsaw, Ind.; Don M. Turnbull, executive secretary, American Poultry & Hatchery Federation, Kansas City, Mo., and Robert L. Hogue, executive secretary, Indiana State Poultry Assn., Lafayette, Ind. Dr. J. Holmes Martin, head, Purdue poultry science department, was moderator.

The day-long program was concluded with a discussion by Richard D. Darley, Purdue extension economist, on the "Outlook for Hoosier Eggs in '59." Prof. D. D. Jackson, extension poultryman, was chairman of the morning session, and Harry Truax, president, Indiana State Egg Board, served during the afternoon.

At a short business meeting of the Egg Council, Indiana State Poultry Assn., Carroll Eiler was elected permanent chairman. Other permanent officers are: Hobart Creighton, Warsaw; Henry Shoulders, Fort Branch; Clayton Cook, Frankfort; Harold Walker, Jamestown; Bruce Smitherman, Mooresville; Wayne Livengood, Terre Haute; Pete Schickel, Lanesville, and Richard Hamilton, Indianapolis.

Expands Operations

LAKE, MISS.—B. C. Rogers, Morton, pioneer grower and processor of poultry in Mississippi, has purchased 780 acres southeast of Lake to be used for the operation of an eight-unit, 325,000-broiler project and for the expansion of livestock interests with 200 head of purebred Hereford stock. It is reported that the operation will be the nucleus for future expansion. Mr. Rogers said the new installation will aid in supplying the Morton processing plant which is now operating at two thirds of capacity. The Morton operation, begun by Mr. Rogers in May, 1957, employs 400 persons in the plant and many more in feed mills, hatcheries and broiler farms.

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BY SPENCER H. MORRISON, PH.D., D. V. M.

Supplements to Silage Rations for Fattening Yearling Steers

● L. S. Pope, R. D. Humphrey, D. F. Stephens, L. E. Walters and V. G. Heller, Oklahoma Agricultural Experiment Station; Journal of Animal Science, Vol. 18, No. 1, February, 1959, pp. 32-39.

ABSTRACT

A total of 235 long-yearling Hereford steers were used in four fattening trials conducted over a five-year period at the Ft. Reno substation to evaluate the effects of certain simple and complex supplements to soybean meal rations based on milo and either corn or sorghum silage. Three or more supplements were compared in each trial and the supplements were evaluated on an equal protein basis. In all, 13 special supplements were compared with soybean oil meal and their relative value determined by rate of gain, efficiency of feed conversion and carcass merit of the steers.

Except in trial 1, a "two-phase" feeding program was followed with milo being limited to 4 lb. per head daily for the first 84-100 days, followed by essentially full-feeding until the end of the tests. Silage was fed ad lib so that the effect of the various supplements on appetite could be observed. Immature corn silage was used in trial 2, and Atlas sorghum silage was used in the other three trials. In trial 1, milo was fed at the rate of 4 lb. daily per steer for the first 50 days, 8 lb. daily for the next 50 days and 12 lb. daily for the final 50 days of the test. Otherwise, the procedure was the same as in the other tests.

The control group in each test received 2 lb. soybean oil meal (46%, solvent extracted) daily, with other supplements fed on an equal protein basis. Where the supplements tested supplied more energy than the soybean meal fed to the control group, adjustments were made in the milo allowance. A mineral mixture of 2 parts salt and 1 part steamed bone meal was available to all cattle at all times.

The following supplements were compared with soybean meal at various times:

(1) Purdue supplement A; averaging 33.71% crude protein.

(2) Supplement 3-1-1; containing three parts soybean meal, one part chopped alfalfa hay and one part cane molasses, averaging 32.51% crude protein.

(3) Supplement 1-1-1; containing equal parts of chopped alfalfa hay, soybean meal and cane molasses, averaging 22.67% crude protein.

(4) Special supplement; containing 35% dehydrated alfalfa meal, 35% dried molasses, 26.5% condensed fish solubles, 2.5% dry live-cell yeast (20 bil. cells/gm.) and trace mineral mix supplying 100 mg. iron, 10 mg. copper and 2 mg. cobalt—1%, mixture averaging 28.55% crude protein.

(5) Soybean meal — sesame mix; containing 67% soybean meal and 33% sesame meal, mix averaging 47.09% crude protein.

(6) Soybean meal — fermentation solubles; containing 78% soybean meal and 22% dried grain and cane syrup fermentation solubles, mix averaging 41.9% crude protein.

(7) Soybean meal — Aureomycin; soybean meal 97.5% and crude chlortetracycline product (90 mg. Aureomycin per steer daily), 2.5%, mix averaging 44.59% crude protein.

(8) Urea-molasses; containing 89.5% cane molasses and 10.5% urea ("262"), averaging 30.6% crude protein. In addition, the steers received 0.1 lb. steamed bone meal and 1 gm. commercial trace mineral mix per steer daily in concentrates as fed. Urea-molasses mix replaced soybean meal by step-wise substitution during the first 21 days of trial.

(9) Stilbestrol at 10 mg. per head daily in the feed, either throughout the feeding period or just during the last half of the feeding period.

(10) Soybean meal plus vitamin mineral mix, fed at the rate of 2 lb. soybean oil meal and 1 lb. vitamin mineral mix. Vitamin mix was comprised of dried molasses, 0.79%; B-complex supplement (Fortafeed), 0.05%; dry stabilized vitamin A (30,000 U.S.P. units per gram), 0.066%; ground limestone, 0.1%, and a commercial trace mineral mixture, 1 gm. per steer daily.

In general, it is apparent from the data that none of the supplements or

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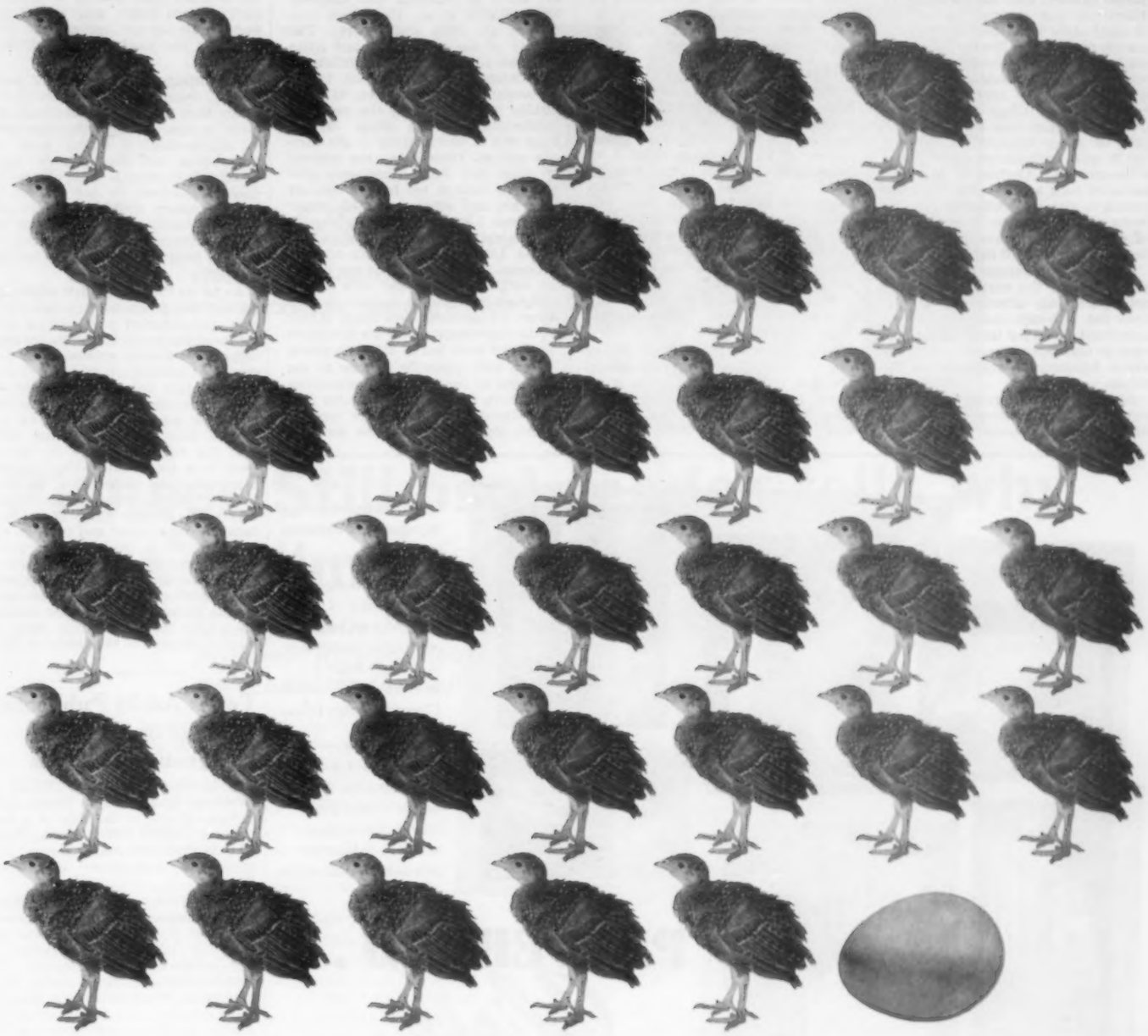

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*Project No. 715, Washington Agricultural Experiment Stations, Department of Poultry Science, State College of Washington. (*Poultry Science*, 36, 1344 [1957])

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special rations, with the exception of stilbestrol, was superior to soybean oil meal alone when fed on an equal-protein basis, under the feedlot conditions of this experiment. Further, none of the supplements had any marked effect on appetite, as evidenced by the silage consumption. Little difference was shown in the milo or silage required to produce 100 lb. gain, with the exception of the stilbestrol lots. Certain of the supplements such as 3-1-1 and 1-1-1 appeared to give more efficient gains in terms of milo required, but this was offset by greater quantities of these supplements required per 100 lb. gain.

Dressing percentage and carcass grades among the various lots were not significantly affected by the rations fed, although there was a non-significant trend for the dressing percentage and carcass grade to improve where Aureomycin was added to the ration.

Although the differences were not significant, the urea-molasses mixture resulted in slower and less efficient gains. The use of a thyroid inhibitor (1-methyl-2-marcaptoimidazole) failed to improve gain or carcass quality when used in trial 4.

COMMENT

There is much dispute as to whether or not beef cattle benefit from the addition to the ration of certain "rumen stimulating factors." The development of Purdue Supplement A by Beeson and associates (1952) is predicated on the use of poor quality roughages such as corn cobs, etc. Other workers have since noted that the inclusion of alfalfa meal or the mineral fractions of alfalfa meal improved gains in beef cattle and sheep fed such poor quality roughage rations (Klosterman et al., 1953; Richardson et al., 1953; Tillman et al., 1954, and others).

However, when roughages are of fair or good quality, the indications are that little or no response is secured from the addition of alfalfa meal or other possible rumen "activators" (Tillman et al., 1954; Perry et al., 1954; Matsushima and Clanton, 1958; Staheli et al., 1958; Van Arsdell et al., 1953, and others). The quality of the corn silage and Atlas sorghum silage used in the Oklahoma experiments is not described, but it obviously must have been of good quality as evidenced by the results—consumption of the silage varying from 37.3 to 49.5 lb. daily on the various rations. Considering the amount of silage fed, daily gains were adequate in view of the limited amount of grain and supplement fed—ranging from 1.85 to 2.15 lb. daily with the exception of the stilbestrol fed cattle. Little real difference appears between the results of the use of Atlas sorghum silage and corn silage, although it should be realized that no direct comparisons were made of this in the experiment, since the two types of silages were fed in different years.

It is very probable in view of the evidence so far from the universities that there is little real basis for feed manufacturers to formulate tremendously complicated rations for beef cattle when good quality roughages such as corn silage, sorghum silage, and legume hays or legume-grass hay mixtures are used in the ordinary amounts.

If roughage is limited or of poor quality, there is some evidence to indicate that more attention should be given to possibly supplying dehydrated alfalfa meal, a higher level of phosphorus, and maybe even some additional vitamin A. It is extremely doubtful whether or not vitamin D is a necessary addition to such rations, although we find it listed on most commercial feed tags. Does it serve a purpose or is it solely for tag glamor?

As far as the use of other additives, such as fish products, molasses products, fermentation products, and yeasts of various descriptions are concerned, the limited evidence does not permit at present, an unqualified recommendation for their inclusion in beef cattle supplements. There is one persistent point which should be answered. Iowa reported in June, 1957, that the addition of 100 lb. Torula yeast to a ton of 10-10-10-15 supplement to supply unidentified "factors" was of distinct benefit during the corn-silage feeding phase of a cattle fattening experiment and that the addition of 100 lb. dried brewers yeast to the same supplement in place of the Torula yeast was of no appreciable benefit and did not pay its way. To my knowledge no further reports have been made by either Iowa or other colleges on this isolated finding.

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Texas A&M Publishes Bulletin on Vertical Integration of Hogs

COLLEGE STATION, TEXAS — "Vertical Integration in Texas Agriculture—Hogs" is the title of a new bulletin released jointly by the Texas Agricultural Extension Service and the Texas Agricultural Experiment Station.

The bulletin reports that integrated hog production is in the experimental stages of development in Texas and that most interest in integration has been on the low-income farms of the feed-lacking east Texas timberlands. Broiler producers who are looking for other sources of income to offset the effects of narrow cost-price margins on broilers are greatly interested in integrated hog production, according to the bulletin. There has also been mild interest in integration among farmers who produce their own grain.

There are three types of hog integration. They are: the farmer owns or obtains his pigs, and the feed company finances the feed; if the farmer raises his own grain, the feed company finances the purchase of pigs and the supplement; the feed company finances everything, other than buildings and labor.

Plan A is the most common in Texas.

Few farmers producing hogs under contract raise their own grain. At the present time 1-2% of the commercial hog producers in Texas operate under some type of contract with a feed or packing company or both.

The bulletin, which also discusses future developments, precautions in making contracts and entering into integration, can be obtained from county agents in Texas or by writing the Agricultural Information Office, College Station, and asking for Bulletin L-424.

New Poultry Plant

DOUGLAS, GA. — The Industrial Corp. in Douglas is conducting an all-out drive to obtain building funds for the Crider poultry processing plant. The aim of the drive is to raise $50,000. The architect has completed plans and specifications for the new plant, which is to be constructed with money subscribed as loans from Coffee County people.

Lilly SALES TIPS
FROM GRASS-ROOT SOURCES
DONALD MACKAY, MT. CARROLL, ILLINOIS

Pioneer Stilbosol feeder tells why he is "more sold than ever"

One of earliest users of supplements with Stilbosol lists continuing benefits of gain-booster for heifers and long-fed steers

Four years ago, Donald Mackay was among the first feeders to be granted permission to feed Stilbosol supplement to an experimental lot of cattle. His test steers put on 3.46 pounds daily . . . the biggest gains Mackay had ever seen in his 26 years of feeding cattle.

Since then, Mr. Mackay has fed Stilbosol feeds to more than 4,000 head. His experience should be of particular interest to you in helping your customers to bigger feeding profits with your Stilbosol-fortified supplement.

Long-fed steers average 3 pounds gain

In a recent interview, Mr. Mackay said, "We've been averaging three pounds daily gain or better on our steers when they've been fed long feeds from 240 to 270 days. Stilbosol has given us up to ½ pound more daily gain. Before using Stilbosol, a bunch of steers had to do well to put on 2½ pounds daily under the same feeding conditions."

Stilbosol feeds profitable for heifers, too

"We've probably fed Stilbosol supplement to 1,500 market heifers since we started using it," Mr. Mackay continues; "and we've found we get comparable results here, too. On both steers and heifers, I'd say we've averaged about 16% extra gain by using Stilbosol . . . and we've cut our cost of gain by about 12%."

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Fact #2. *The performance record of Stilbosol is the highest of all additives tested.*

Fact #3. *Stilbosol returns an average of $15 for each dollar invested, as compared with an approximate 5:1 return for the next highest additive.*

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This feedlot is part of Mackay's 860-acre operation. He also owns and operates a ranch in Montana that produces 300 calves a year.

*As reported by Iowa State College, Cattle Feeder Day, March, 1959

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ENZYMES IN ANIMAL FEEDS

"Enzyme supplements are already established as important feed additives, and we can expect greater use of enzymes in feeds for animals as research provides answers to the many questions concerning action of enzymes."

By Dr. Leo S. Jensen
State College of Washington

Dr. Leo S. Jensen

AUTHOR—Dr. Leo S. Jensen, a native of Washington, obtained his B.S. degree from the State College of Washington in Pullman in 1949 and his Ph. D. degree in animal nutrition from Cornell University in 1954. From 1949 to 1951 he was on the faculty at WSC, working on egg quality problems. Since 1954 he has been assistant professor in the department of poultry science at Washington State, working on nutritional problems.

In the spring of 1957 experimental results from our laboratory were reported which showed that the feeding value of barley for chicks and poults could be markedly improved by two different methods. One was a water-treatment of the barley in a special way, and the other was addition of dry enzyme preparations to rations containing barley. In the two years since these discoveries, considerable interest has been aroused in the use of enzyme preparations in animal feeds, and extensive practical applications of these findings have been made by feed manufacturers in the western part of the U.S.

In general, in our laboratory, the water treating process has resulted in a greater response in growth and feed efficiency than the use of enzyme preparations. It has not been economically feasible, however, to water-treat barley for commercial use. Therefore, addition of enzyme preparations to rations has been the way these findings have been applied commercially. Most of the enzyme preparations presently available to the feed manufacturer are of bacterial origin. It has been found, however, that enzymes produced by Aspergillus oryzae (fungus) and a specially malted barley will also improve the nutritional value of barley similarly to bacterial enzymes.

The findings in our laboratory on improvement in barley by enzymes and water treatment were confirmed by Arscott at Oregon State College, Anderson at Utah State University, Fritz and associates at Dawe's Laboratories, and in a number of other commercial laboratories. However, some workers, including Stephenson at the University of Arkansas and Gerry at the University of Maine have failed to obtain improved results when local barley was used. The first reports of failure to confirm these results were indeed surprising in view of the sizeable and consistent response obtained in our laboratory.

In attempting to resolve these differences several varieties of barley produced in the vicinity of Pullman, Wash., were obtained, as well as several samples of barley produced in different parts of the U.S. and Canada in order to study the effect of variety and location of production on response to enzymes and water treatment. All of the varieties of barley produced around Pullman, including both malting and feed types, were uniformly poor for chicks when unsupplemented, and responded markedly to both water treatment and enzyme supplementation. Therefore, the differences in results between laboratories could not be explained on the basis of varietal differences.

TABLE 1. Effect of geographical location of production of barley on growth response of chicks to bacterial enzymes and water treatment.

State or province	Average body weight (3 weeks of age) —Treatment— None	Plus enzyme	Water treated
	gm.	gm.	gm.
Washington	147	176**	210**
Oregon	140	190**	220**
Wisconsin A	156	186**	229**
North Dakota A	185	190	231**
North Dakota B	180	201	233**
Wisconsin B	175	179	213**
Ontario	195	191	225**
New York	188	181	222**
Minnesota A	192	204	220**
Minnesota B	187	193	214*
Arkansas	188	195	200

(*) Significantly and (**) highly significantly different from the untreated control as determined by statistical analysis.

TABLE 2. Effect of geographical location of production of barley on growth response of chicks to fungal enzymes and water treatment.

State or province	Average body weight (3 weeks of age) —Treatment— None	Plus enzyme	Water treated
	gm.	gm.	gm.
Washington	135	181**	202**
Oregon	135	197**	222**
Wisconsin A	160	191*	217**
North Dakota A	154	199**	226**
North Dakota B	179	186	213*
Wisconsin B	156	173	220**
Ontario	169	190	215**
New York	179	200	221**
Minnesota A	182	193	229**
Minnesota B	188	187	228**
Arkansas	169	183	218**

(*) Significantly and (**) highly significantly different from the untreated control as determined by statistical analysis.

Barley from Various Areas

Barleys grown in different parts of the country were compared in two different experiments. In the first study, shown in Table 1, a bacterial enzyme preparation was used. In addition, the eight samples were water treated. It can be seen that only the samples produced in Washington, Oregon and one sample produced in Wisconsin were significantly improved by enzyme supplementation. On the other hand, all barleys except the one produced in Arkansas were significantly improved by water treatment.

The second study, shown in Table 2, was similar except that a fungal enzyme preparation was used instead of the bacterial enzyme concentrate. In this experiment, only the barleys produced in Washington, Oregon and one sample each from North Dakota and Wisconsin were significantly improved by enzyme supplementation. However, all the barleys were significantly improved by water treatment.

Results from these two studies show clearly that the magnitude of response one can expect from enzyme supplementation will vary with the area of production of the barley. It is quite understandable, then, why some investigators have reported negative results by enzyme supplementation of barley. It appears, however, that barleys produced in the Rocky Mountain and Pacific Coast states respond markedly to enzyme supplementation, and it is in these areas, of course, where most of the barley in the U.S. is produced. It is interesting that even though all the barleys did not respond significantly to enzyme supplementation, most of them were improved significantly by water treatment. This suggests that it may be possible to develop enzyme preparations in the future that will equal the water treatment response and, therefore, improve most all barleys regardless of area of production.

Mechanism of Improvement

While on the subject of water treatment, let us discuss the procedure for this method of improvement and a possible mechanism by which the improvement is taking place. In our laboratory the following procedure has been found to give maximum improvement: One part of warm tap water (about 60° C.) is added to one part by weight of ground barley and stirred. After stirring, the wet barley is immediately (without soaking) spread on trays to a depth of about ¾ in. and placed in a forced draft oven to dry. The oven is kept at a temperature of about 70° C. and barley remains in the oven for approximately 24 hours. It has been found the optimum oven temperature is somewhere between 40 and 70° C. Considerable work in our laboratory has demonstrated that a number of factors, including temperature of water added to barley, ground vs. whole barley, and temperature of the oven are extremely important in determining whether or not maximum improvement will be obtained. Even when all these factors are taken into account, water treatment has failed to give the expected improvement at times. Recent evidence in our laboratory suggests that the improvement by water treatment is brought about through action of microorganisms. By adding water and incubating (drying) at the appropriate temperature, microorganisms contaminating barley will grow and synthesize enzymes which can then act on barley.

If microorganisms are responsible for the improvement during water treatment, variations in conditions of temperature, time, aeration, etc., that affect bacterial growth, could have a marked influence on the improvement obtained. For instance, it would be expected that flash drying, or drying at a high temperature, would not bring about much improvement. Generally, reduced improvement and more variable results have been obtained in our laboratory by autoclaving barley after adding an equal quantity of water and then drying in an oven at 70° C. This fits with the proposal that water improvement is accomplished by action of microbially produced enzymes on the barley. It has also been found that no improvement at all is obtained by autoclaving wet barley and drying at 95° C. In this case the drying temperature is too high for the microorganisms to grow and synthesize enzymes. A bacterial organism contaminating our laboratory has been isolated. When barley, after wet autoclaving, is inoculated with this microorganism, growth improvement similar to regular water treated barley is obtained.

These findings help to explain the marked differences that have been obtained in different laboratories with respect to improvement in barley by water treatment. If the right organisms are not present in the laboratory or on the barley that is water treated, no improvement would be expected. This is similar to antibiotic growth stimulation of chicks where the right detrimental organisms must be contaminating a laboratory before a response to antibiotics can be demonstrated.

Enzyme Supplementation

Why are barleys produced outside the West not greatly improved by enzyme supplementation? Is this because previous to and during harvesting, conditions were right for growth of microorganisms and production of suitable enzymes on the barley, or is there a permanent improvement in these barleys? To study this, a blend of barleys (grown in Arkansas, New York and Minnesota), which were least improved by enzyme supplementation, was mixed with water, autoclaved and dried in a forced draft oven at 95° C. If the higher than expected nutritional value of these barleys was due to the presence of microbially produced enzymes, this autoclaving treatment should destroy the enzymes and reduce the growth rate of chicks fed the barley to that obtained by feeding western barley.

Results of an experiment comparing the barley blend with Washington produced barley, unautoclaved and autoclaved, unsupplemented and supplemented with enzymes, is shown in Table 3. It is clear that autoclaving the blend of eastern barleys reduced its nutritional value to that of western barley and that a similar autoclaving of western barley had little or no effect on nutritional value. After autoclaving, a highly significant improvement in growth was obtained, however, by adding enzymes to the autoclaved eastern barley blend, suggesting that autoclaving reduced nutritional value by inactivating enzymes.

The difference among barleys produced in different parts of the country, therefore, appears to be caused by variations in the quantity of enzymes contained on the barley. Enzymes in animal nutrition take on much greater significance in view of these results. It now appears that en-

TABLE 3. Influence of autoclaving on response of eastern and western barleys to enzyme supplement.

Source of barley	Treatment	Average weight (13 days)	Feed/gain
		gm.	
Blend (Eastern)	None	122	1.78
Blend (Eastern)	Plus enzyme	132	1.71
Blend (Eastern)	Autoclaved wet	95	2.13
Blend (Eastern)	Autoclaved wet plus enzyme	131**	1.71
Washington	None	107	1.97
Washington	Plus enzyme	139**	1.69
Washington	Autoclaved wet	91	2.25
Washington	Autoclaved wet plus enzyme	137**	1.72

(**) Highly significantly different from the corresponding treatment without enzymes.

zymes, other than those produced by the animal, must be present in order for birds to utilize barley most efficiently. These enzymes may be provided naturally by microorganisms and, if these are insufficient, by adding commercial enzyme preparations directly to the feed containing barley. This is somewhat analogous to vitamin B_{12} in poultry nutrition. If hens are kept on litter and the temperature is optimum for microbial growth, enough vitamin B_{12} is synthesized in the feces and consumed by the hens to supply their needs without supplementing their ration.

The specific enzyme responsible for improvement in barley has not been reported as yet. Enzyme supplements used in commercial feeds, of course, are crude and contain a complex of enzymes. We have reported that a purified protease has brought about some improvement in barley, as measured by chick growth, at a level as low as 2 mg. per pound. We have also reported that crystalline alpha amylase failed to give an improvement in two different experiments, with levels up to 100 mg. per pound. Therefore, it is quite evident that alpha amylase is not the specific enzyme active in improving barley. Recently, in our laboratory, an enzyme recrystallized three times has given a growth improvement equivalent to that obtained with a crude enzyme preparation when fed at the level of 5 mg. per pound. Further studies with this crystalline enzyme are being made to determine whether or not it is the specific enzyme involved in improvement of barley and other cereal grains.

Significance of Enzymes

What is the significance of enzymes in present day poultry feeds? Rations for growing chickens or turkeys should contain enzymes if all or part of the cereal grain is barley or oats. It has been demonstrated that growth of broilers fed rations containing barley plus enzymes is comparable to birds fed similar rations containing corn. Feed efficiency is not usually as good because of the fibrous hull in barley. Comparable weight can also be obtained in market turkeys with barley and corn rations, provided that enzymes are added to the barley diet. Feed efficiency will also be greatly improved. Therefore, whenever the price differential between corn and barley is large enough, barley can be successfully used in combination with a commercial enzyme preparation.

Results with laying hens are less clearcut. Experiments at the Western Washington Experiment Station have shown little benefit from adding enzymes to feeds containing barley for White Leghorn hens. Some improvement in litter condition, however, was noted with the enzyme supplemented feeds, and an improvement in feed efficiency was suggested when water treated barley was used. Utah and Wyoming Experiment Stations have reported improvements in egg production and feed efficiency with enzymes under their conditions.

Since most of the feed containing barley for broilers and growing turkeys is fed in the pelleted or crumbled form, stability of enzyme preparations to pelleting is important. Feeds containing an enzyme preparation have been stored in our laboratory at room temperature for periods up to nine months in both the pelleted and unpelleted forms. No material reduction in enzyme potency was observed during this long storage period. Pelleting of the feeds containing the enzyme appeared to have little effect upon the potency of enzyme preparations.

Other Animals

Since enzymes have a significant place in the nutrition of birds, it is of interest to determine the application of enzymes in feeds for other domesticated animals. Very little work has been reported with swine. Dr. J. E. Oldfield of Oregon State College has found a slight improvement in growth rate of swine by adding enzymes to feed containing barley. An experiment at Washington State College showed that water treated barley definitely improved growth rate of pigs as compared to untreated barley. Dr. Damon V. Catron at Iowa State College has reported that the crude enzyme preparations available commercially, in addition to pepsin and other proteolytic enzymes, are effective for improvement of growth and feed utilization in baby pigs. Dr. Catron and coworkers reported that the baby pig under five weeks of age produces an inadequate amount of certain digestive enzymes, particularly when fed diets containing soy protein as the major source of protein. Pepsin and other enzymes from animal sources were active for baby pigs, but have been found to be inactive for improvement of barley for chicks.

Very recently Dr. Wise Burroughs at Iowa State College has reported that Agrozyme, a product of Merck & Co., improved gain and feed efficiency in beef cattle. Addition of this enzyme preparation to the concentrate for cattle brought a 12% increase in gains and a 7% decrease in feed requirement. Pabst Brewing Co. workers have also reported positive results with enzymes for beef cattle. Therefore, it appears that enzymes will be of importance, not only for poultry but for other farm animals.

It is of interest to speculate on whether or not the improvement with beef cattle is brought about through a similar mechanism as the improvement in poultry. The response of beef cattle was obtained with rations containing large quantities of corn (14% moisture or lower). In poultry, very little if any response has been obtained to date by adding enzymes to rations containing corn. It is possible, therefore, that the response in the two different animals is brought about by different enzymes.

Future of Enzymes

What about the future of enzymes as feed additives? There is little doubt that they will become increasingly important as supplements to feeds containing barley grown in the western states. Although most of the work on enzymes has been done with diets containing barley, there is also evidence that some of the other cereal grains are also markedly improved by enzyme supplementation. In a recent experiment in our laboratory, seven out of eight different varieties of wheat were improved by water treatment, and three of the eight varieties were significantly improved by enzyme supplementation. Therefore, if wheat should again become an important feed grain for poultry, as it was prior to World War II, enzyme additions to such feeds are indicated. Oats and rye are also markedly improved, and in limited studies millrun and middlings have been improved by water treatment. Small responses with both corn and milo have been obtained occasionally in our laboratory with enzymes, and rather consistent small responses have been obtained by water treating corn. It is entirely possible that once we know the complete mechanism of

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Raymond BAG CORPORATION
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ATTEND MEETING—Area sales representatives and district managers of the multiwall bag division, West Virginia Pulp and Paper Co., recently attended a two-day meeting at St. Louis. The session included four product familiarization clinics and a tour of the firm's recently acquired St. Louis plant. Among those at the meeting were, left to right: E. F. Groppe, plant customer service representative of the firm's St. Louis plant; E. B. DuBois, Minneapolis district manager; John Floyd of the company's packaging laboratory, Charleston, S.C.; Erle B. Swaim of Lincoln, Neb., sales representative, Kansas City district; J. O. Frahm, Chicago district manager; Matt Diedericksen, St. Louis plant technical service representative; James Compton of Wichita, Kansas, sales representative, Kansas City district; Norman Hansen of Fargo, N.D., sales representative, Minneapolis district; Roy Jury, Kansas City district manager, and T. L. Jones, regional sales manager from New York.

action of enzymes and of the water treating process, it may be possible to develop commercial enzyme preparations that will be of benefit in rations containing corn and milo as well as other cereal grains.

Results in our laboratory show clearly that the crude enzyme preparations now available are not improving utilization of fiber by poultry. It is possible that means will be found of improving utilization of fiber, organic phosphorus, and perhaps protein concentrates and other feed ingredients by use of enzymes in the future.

The report from Iowa State College that enzyme supplements may have an important place in beef cattle rations further extends the field of dietary enzymes.

Like all past nutritional advancements, enzymes in feeds will not be a panacea for all nutritional problems. There is no doubt, however, that enzyme supplements are already established as important feed additives, and we can expect greater use of enzymes in feeds for animals as research provides answers to the many questions concerning action of enzymes.

New Jersey Firm 'Has Broilers—Will Travel'

BOUND BROOK, N.J. — "Have broilers—will travel," reads the card of the Broiler Barbecue Service, an enterprise which began operations here a year ago.

Since last summer, the firm, a partnership, has been putting on barbecues in the surrounding area. The service caters to church, fraternal and other groups of from 50 to 500 persons and provides the entire service, according to A. R. Turkheimer, one of the partners. The firm has portable barbecue pits.

"Since one of us is involved in animal nutrition," Mr. Turkheimer said, "it is no coincidence that we think Broiler Barbecue Service can further the feed industry through the promotion of poultry barbecues."

NAMED MOREA DISTRIBUTOR

POSEYVILLE, IND. — Poseyville Grain & Feed Co. has been named a distributor of Morea liquid feed supplement by the U. S. Industrial Chemicals Co., New York. Flavian Reising, partner in the grain and feed firm, said Morea will "bring automation to the feedlots of farmers and feeders in the area."

Scours Control Is Major Benefit from Antibiotic—USDA

WASHINGTON—The major advantage of feeding Aureomycin to dairy calves is the reduced incidence of scours and not the temporary increase in growth rate, according to livestock scientists of the U.S. Department of Agriculture.

In experiments conducted by USDA's Agricultural Research Service at Beltsville, Md., test calves were fed Aureomycin as part of their diet for the first 90 days after birth. A smaller percentage of the antibiotic-fed calves developed scours than the control animals which received no Aureomycin.

USDA researchers said differences between groups in the incidence of scours were not large, but were consistent for all ages and all periods during the trials. Three of the control calves died of diarrhea during the trials.

Aureomycin-fed calves gained an average of 19 lb. more than the control group for the 90-day period. When the antibiotic was removed from their diet, however, these calves gained less rapidly than the controls. At 6-12 months of age there was no significant weight difference between the Aureomycin-fed calves and the controls.

Measurement of the feed intake of all calves used in the experiment indicates, according to USDA, that Aureomycin stimulates appetite and rate of weight gain and increases feed efficiency while it is being fed. After Aureomycin feeding is stopped, rate of gain decreases and appetite returns to normal. Research also has demonstrated that these feeding advantages diminish as the calves grow older. Addition of Aureomycin to the diet for this purpose is seldom profitable after calves reach two months of age, USDA reported.

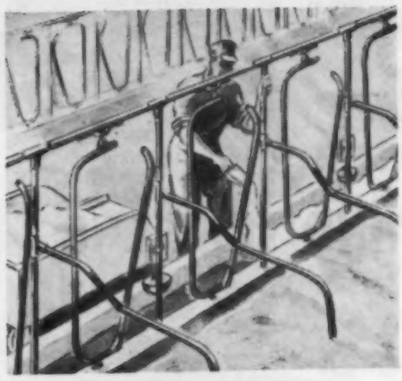
Seminar at Madison

MADISON, WIS.—Dr. H. R. Bird, head, department of poultry husbandry, University of Wisconsin, and a group of 11 graduate students and staff members recently conducted a seminar on disease prevention and nutrition with research personnel of American Scientific Laboratories, Madison.

Preceding the seminar, the university group toured ASL research laboratories and production facilities.

Farm and Feed Salt

Sterling Blusalt can make hot-weather feeds more productive



Animals often eat less when the weather is hot and humid. Hence it's particularly important that the feed they do eat is easy to digest and supplies all needed nutrients. You can be sure your feeds will have both the salt that helps digestion and seven minerals vital to healthy growth by using one of the Sterling Blusalt products.

Sterling Supermix Blusalt, Sterling Gold Bond Blusalt and Sterling Swine Supermix Blusalt all *combine* high-quality salt with 7 essential trace minerals. The difference is in proportions. Sterling Supermix Blusalt has manganese, iron, sulfate sulfur, copper, cobalt, iodine and zinc in the now known correct amounts for livestock feeds. Sterling Gold Bond Blusalt contains *extra manganese* to guard against leg weakness in poultry. Sterling Swine Supermix Blusalt is fortified with *extra zinc* to counteract parakeratosis in swine.

You can get guaranteed analyses of these three quality Sterling Blusalt products, along with usage charts for each, from International Salt Company. Ask the Sterling representative in your area, or contact our nearest sales office.

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The comprehensive services of International Salt Company's Animal Nutrition Department are available to you at any time, free of charge. This department, located in Watkins Glen, New York, does continuing research into the proper use of salt and trace minerals in modern livestock and poultry feeding programs. It's *your department* to consult at any time for advice on mixing or feed-formula problems, and for information on any of the Sterling Salt products.

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Every ingredient used to make Sterling Blusalt—the seven minerals, the salt, the anti-separation agents—is thoroughly checked for quality. Each successive step in Blusalt manufacture is closely supervised to insure proper distribution of minerals in the salt. Frequent chemical tests for product uniformity are then made on different batches before Sterling Blusalt is shipped.

This rigorous quality control program is a principal reason why Sterling Blusalt products perform so well. Equally important, International's 50 years of experience in salt are always available to help feed manufacturers select the proper Sterling Salt product and get the most out of that product.

Next time you order salt, why not specify Sterling? You'll be sure of getting today's highest-quality salt products formulated especially for premium feed mixing.

Did You Know?

- Beef cows now comprise 52 per cent of all cows on farms, compared with 39 per cent in 1947.
- The minimum-sized poultry unit for an efficient one-man operation should be either of the following: 4 annual flocks of 30,000 broilers each; 4,000 layers with the steady raising of replacements; or 2,000 turkeys—one flock per year if they are roasters, two or more flocks if they are broilers.

STERLING SALT

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ers and feeders in the area."

oratories and production facilities.

JOE BROOKS

BY AL P. NELSON

Ideas Will Grow in The Right Soil

There was a lull in business at four o'clock that spring day. Most of the farmers who had been coming in for service all day long, had gone home. The mixing room crew was cleaning up, and in the office Joe was checking over the late afternoon mail, and Rusty Hagen, the runtish bookkeeper, was working on the ledgers.

"Joe, have you got a minute?" Rusty asked suddenly, a slip of paper in his hand.

"Why, sure," Joe answered, looking at his employe. "What is it?"

Rusty Hagen had been with Joe for many years and was a very conscientious and efficient bookkeeper. His back was slightly humped, and Rusty sat in a chair sometimes as if he were in pain, but one never heard a word of complaint from him. He was quiet, and his brown eyes could twinkle at a good joke, but he had that rare quality of listening a great deal instead of keeping his jaws going in rapid conversation.

Now Rusty consulted his piece of paper. "Joe, I have sat through a lot of sales training meetings without contributing many ideas to the business," he said. "But I have been listening to everything that has been said. Those sessions are very stimulating. First thing a fellow knows the habit of looking for ideas gets to be a pestering thing. You just can't rest some nights, because you get thinking about something somebody said at those meetings, or about something you're wondering will work in the business."

Joe chuckled. "Yes, that's part of the business of sales training meetings. A lot of dealers give up on them too early. They think that employes aren't interested and some dealers expect results too quickly. But the truth of the matter is, if a sales training program is well organized and repeated often enough, it does change our way of thinking. Most of us then get into the habit of looking for business building and time saving ideas."

Rusty nodded. "It's like a son-in-law who listens for years to his mother-in-law infer that he actually is a good-for-nothing stinker," he commented drily. "After a while he begins to think maybe she is right."

Joe laughed. "I suppose so. But I really am pleased with our sales training program. It has paid off for us in many ways."

"I got to analyzing our customers the last couple of weeks," Rusty said. "I found that we serve about 480 different customers per month and that we send 275 statements to them monthly."

Joe looked surprised. "I didn't know we had those figures. Very interesting."

Rusty's Ideas

"With higher postage rates," Rusty said, "we ought to take full advantage of each monthly statement. With a 4¢ postage rate we could still slip in a thin mailing piece with each statement and thus lower our advertising cost."

Joe was thoughtful. "Yes, I imagine we haven't taken advantage of that feature. Every ad piece we can slip into an envelope with a statement means a 4¢ saving on first class advertising or a 3¢ on third class."

Rusty nodded. "We can mimeograph seasonal sales slips which will slip into an envelope containing a monthly statement. These slips can detail special buys and we may get quite a few extra sales through them."

Joe looked interested. "In other words we could time our seasonal postcard mailings and include the same message in 275 monthly statements, thus saving 3¢ postage on each or $8.25. We could use the same stencil for these slips as we'd use to mimeograph postcards for the rest of our mailing list."

Rusty nodded.

"Very good," Joe said. "We can use that idea."

"Then," continued Rusty, "we want farmers to use our Free Bulletin Board for their Used Farm Machinery items, don't we?"

"That's right."

"Well," continued Rusty, "there's a lot of space on the average monthly statement. Why don't we just print at the bottom 'Have You Any Items to List on Our Bulletin Board? This Service Is Free to Farmers.'"

Joe was smiling. "Rusty, I like that. Every time a farmer gets a statement from us that he owes us money, he's reminded of that free bulletin board service. Makes him feel kindlier toward us."

"I think so," said the brown eyed bookkeeper eagerly. "I do think, too, that we should have a line of copy somewhere on that statement such as 'It's a pleasure to be of service to you.' Statements are pretty cold looking things, and it doesn't hurt to warm them up with a message of appreciation."

Joe chuckled. "Why, Rusty, that's fine. It's a wonder we haven't thought of something like that before. That copy will make our statement different from others that the farmer receives."

Rusty hesitated a little. "And we aren't making use of the rear of our envelopes for advertising."

"What do you mean?"

"Well, we have so many services for farmers, such as mobile mill service, bulk delivery, dry fertilizer spread-

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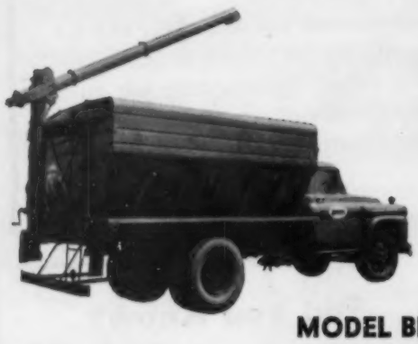

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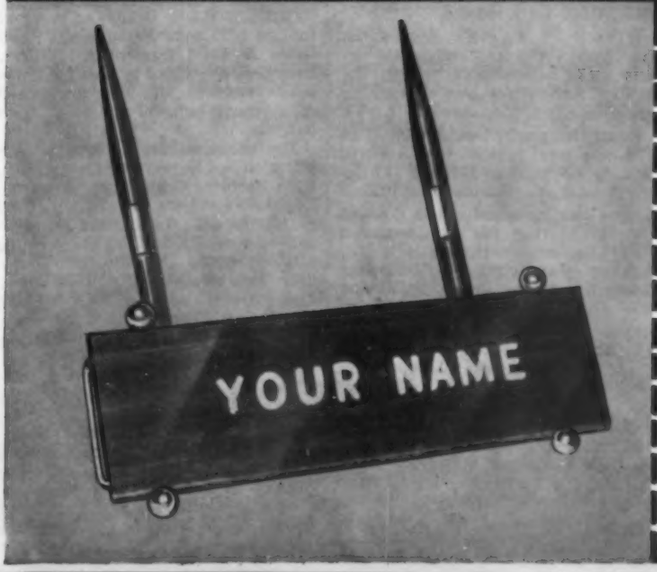

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NEW MEXICO BLENDING PLANT—The Morea blending plant of Mitchell Seed & Grain Co., Roswell, N.M., is shown here. The firm is a distributor of the liquid feed supplement. A local radio program handled by Ervin Mitchell, president and general manager, was the subject of a feature article in Feedstuffs (April 4, 1959). That article included a photo of a Morea blending plant which was identified as belonging to Mitchell Seed & Grain, but was the property of another firm.

ing, anhydrous and liquid application, that these ought to be listed on the back of the envelope, along with small pictures of our Hansen's Creek Mill, Endeavor Branch, our bulk truck, our mobile mill and fertilizer application equipment."

"Hm," said Joe thoughtfully. "If we made the photos small enough maybe we could do it. A letter in the mail is seen by many people. Why not take advantage of this, and why not make sure the farmer knows about all the products and services we offer? Rusty, if you keep this up, we can give you another title—Head of the Research Department."

Rusty flushed with pleasure. "It's fun thinking up ideas—and a challenge, too. When I see Milt, Pop, Smiley and all the others coming up with workable ideas, it spurs me on to do my share, too."

Joe smiled. "Keep up the good work, Rusty, and you'll get an extra $10 in your pay envelope this week. I always reward those who give me valuable ideas."

Broilers Are Major Mississippi Industry, News Story Declares

BILOXI, MISS.—Mississippi's spectacular rise in broiler production from 50,000 birds in 1935 to 85,424,000 last year has brought broiler growing into prominence as one of the state's major industries.

This was pointed out recently in a news story in Mississippi newspapers which stated that the industry last year brought broiler owners $46,872,000—a sizable piece of the state's $548,926,000 farm income.

Written by James Saggus, an Associated Press staff writer, the article said Mississippi's rise in the poultry world "has been something sensational."

From the production of 50,000 in 1935, the total jumped to 816,000 in 1940, to 2,369,000 in 1945, to 17,010,000 in 1950 and 42 million in 1955.

"The total production has doubled since 1955, when the crop produced $25,715,000 in income, and it is still climbing. In February, Mississippi hatcheries were producing almost 50% more chicks than a year ago.

"The center of the broiler industry is Scott County, in central Mississippi. The county is almost blanketed by broiler farms. Adjoining Rankin, Smith, Newton and Leake counties also have good production, while Itawamba in northeast Mississippi and Jones, Lamar and Forrest in south and southeast Mississippi have large numbers of broilers.

"The extension service checked into the broiler situation recently in Simpson County, one of the fast-growing broiler areas.

"County Agent Milton Edwards of Mendenhall attributed the rise in broiler production to cuts in cotton acreage, along with increased costs of producing cotton and the uncertainties of weather and insects.

"The swing to poultry, banker S. D. Davis, of Mendenhall said, has made a big change for the better in business conditions in the county. The poultry dollar, he said, is spent many times.

"Feed dealer H. F. McCarty, Jr., Magee, said poultry production is moving to Mississippi because 'we are producing the birds cheaper than in any other part of the nation.'

"About half the broilers in Mississippi are grown in Scott County. The industry provides a payroll of $1,072,000 a year, with six hatcheries in Forest accounting for about $2,000 weekly.

"The 24 feed dealers in Forest pay their more than 200 employees almost $10,000 weekly, and the dealers sell more than 2,515 tons of feed weekly. Add to that the cost of 120 trucks used by the industry, the gasoline bill run up by the trucks and numerous sidelights and the total makes broilers one of the biggest businesses in the state.

"A conservative estimate would be that the broiler industry directly adds more than $50 million a year to the state's economy—and that $50 million circulates through several hands to increase its worth many times."

Ohio Association Names Committees

GREENVILLE, OHIO — Chairmen for the 1959 committees of the Ohio Grain & Feed Dealers Assn., Inc., have been appointed by George Moorhead, president, and were announced in a recent issue of the association bulletin.

The chairmen are as follows: Arbitration — Nelson J. Cotton, Jr., Ohio Farmers Grain Corp., Fostoria. Legislative—Myles W. Turner, Perl D. Turner Co., Lancaster. Membership—Leon M. McCorkle, Waldo (Ohio) Supply Co., Inc. Auditing—John Russell, Russells Co., Hilliards. Convention—Vincent C. Kahle, Luckey (Ohio) Farmers Exchange Assn. Educational—Carl A. Pitstick, Early Elevators, Inc., Lytle. Insurance — Ralph Kagay, the Mill Mutuals, Columbus. Feeds—Martin Schultz, the Urbana (Ohio) Mills. Executive—A. J. Koppenhafer, Hub Grain Assn., Bowling Green. Transportation — Frank Miller, the Ohio Grain Co., Milford Center.

The resolutions and nominating committees will be named later, the bulletin said.

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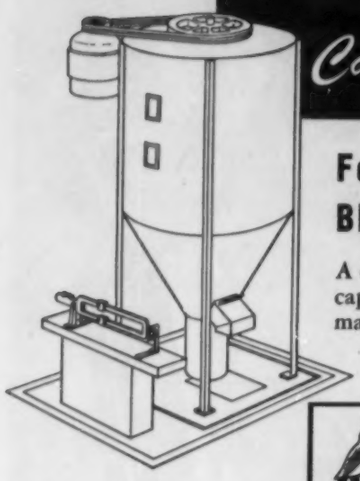

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Scientists Discuss Pigments in Cottonseed

WASHINGTON—Scientific leaders in a number of research areas met recently for a conference on the chemical structure and reactions of gossypol and non-gossypol pigments of cottonseed. The conference took place at the U.S. Department of Agriculture's southern utilization research and development division in New Orleans, La.

Gossypol and related pigments are largely responsible for discoloration occurring in cottonseed oil. The presence of these pigments also makes special care necessary in the preparation of cottonseed meal for inclusion in mixed feeds for poultry and swine, it was pointed out in a USDA report.

Since the pigment occurs in minute glands distributed throughout the cottonseed, it is impractical to remove them by mechanical means, making the chemistry of the pigments a matter of economic importance to all branches of the cotton and cottonseed industry.

Scientists who attended the meeting are engaged in studies of the chemistry of gossypol and its reactions in a search for ways of coping with this problem.

Dr. Roger Adams, research professor emeritus at the University of Illinois, who pioneered research on gossypol and proposed its chemical structure more than 25 years ago, attended the meeting and participated in the discussions. The work done under his direction was credited by various speakers with making possible the determinations of structures for gossypol, its derivatives and degradation products.

Dr. J. D. Edwards, Clemson Agricultural College, and Dr. D. A. Shirley, University of Tennessee, have carried these studies further in recent years by accomplishing the complete synthesis of gossypol and some of its derivatives.

F. G. Dollear, reporting on gossypol research in the southern laboratory, discussed gossypol-like pigments, including gossypurpurin, gossycaerulin and gossyfulvin, and said that evidence indicates they are reaction products of gossypol.

Other Phases

A number of other phases of the gossypol problem were taken up during the meeting. J. H. Brawner, Wesson Oil and Snowdrift Sales Co., New Orleans, Dr. H. L. Wilcke, Ralston Purina Co., St. Louis, and T. H. Hopper, chief of the industrial crops laboratory, SURDD, discussed the economic importance of gossypol, pointing out that it constitutes an important economic problem, because it is responsible for increased processing costs for both cottonseed oil and meal.

Presence of the pigments adds to the difficulty and expense of refining the oil, and results in the off-color which frequently causes the price of the oil to be discounted. Gossypol also limits the use of the cottonseed meal for feeding to poultry and swine to that which has been specially processed for this purpose.

Reactions of gossypol with protein and other seed constituents were discussed by Wilda Martinez, SURDD, Dr. C. M. Lyman, A&M College of Texas, and J. B. Martin, Procter and Gamble, Cincinnati, Ohio. They brought out the fact that gossypol will react with some of the protein constituents, with resulting loss of nutritive value.

Dr. Simon H. Wender, University of Oklahoma, described his work on the non-gossypol pigments of cottonseed.

Dr. Karl Mattil, Swift and Co., and R. T. O'Connor and Dr. V. L. Frampton, SURDD, spoke on pigment chemistry in oil processing. Dr. Mattil emphasized the need for more fundamental research on the pigments so that the problem could be approached more intelligently.

The final section of the program was devoted to reports on animal reactions to cottonseed pigment compound. Dr. C. R. Grau, University of California, reported on gossypol and its oxidation products as factors in discoloration of egg yolks. J. R. Couch, A&M College of Texas, Edward Eagle, Swift and Co., A. D. Tillman, Oklahoma State University, and Dr. Frampton, SURDD, also presented papers in this section.

The conference was sponsored jointly by the National Cottonseed Products Assn., the National Cotton Council of America and the southern regional research laboratory.

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EGGSHELL BRAND PURE REEF OYSTER SHELL
Clean, odorless. The industry's standard.

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PROFITABLE WINTER SIDELINE—Dodge Grain Co., Salem Depot, N.H., is earning extra dollars during the winter and gaining new summer customers through winter sales of wild bird feed to people who like to attract and feed birds in the winter. Jack Quinn, an employee, shows how sunflower seed is put up in 5-lb. packages. The company also has commercial bird seed as well as a mixture of its own. Frank Burke, operator of the firm, said the winter bird feed customers become lawn and garden supply customers in the spring and summer.

Sales of Wild Bird Feeds Build Winter Volume for Dealer

By CHARLES L. STRATTON

Bird lovers who like to attract and feed wild birds through the winter have provided a good sideline business and source of new customers for Dodge Grain Co., Salem Depot, N.H.

Two years ago, Frank Burke, operator of the firm, didn't stock bird feed. But during the past year more than a ton was sold in small quantities off the counter to walk-in customers.

Besides providing the firm with a good sideline, the bird feed for wild birds also acquaints urban and suburban bird lovers with the firm's stock of fertilizers, garden tools and seeds and brings them back for these during the spring and summer, Mr. Burke points out.

Customers have a wide choice of bird seed including sunflower seeds, chicken scratch and several commercial pre-packaged brands. Employee Jack Quinn, a wild bird enthusiast, also makes up a special low-cost mix which includes a wide variety of seeds liked by birds.

Samples of scratch feed and homemade bird feed mixes are displayed on the counter in open half-pint berry baskets with the price plainly marked on the outside. Mr. Quinn pre-mixes, weighs up small amounts and packs them in paper bags. Sunflower seed is purchased in 100-lb. bags and is weighed out in 1 and 5-lb. lots. Prices range from 25¢ lb. to $1 for 5 lb. Five-pound lots are packaged in both paper and plastic bags. However, Mr. Quinn finds that customers prefer the plastic bag—simply because they can see its contents.

Wild bird feeds are displayed on lower tier of a two-tier display counter located just inside the salesroom where customers cannot help but see them. Wild bird feeders are displayed on upper eye-level tier. A number of commercial feeders are on display as well as several types of locally-made wooden feeders. Mr. Quinn's experience is that birds don't care for fancy or painted feeders. They want them drab and rustic.

A favorite commercial feeder is a small waxed package containing a suet cake-seed mixture. Cut on dotted lines, the package becomes a ready-filled bird feeder to hang up outside the window.

Mr. Quinn, pointing out that feeders are displayed level with the customer's eye, says, "If he buys a feeder, he'll buy wild bird feed."

BIRD FEEDERS — Jack Quinn, employee of Dodge Grain Co., Salem Depot, N.H., holds two of the bird feeders sold by the grain and feed firm. The wooden feeder at left is homemade by a local resident. The other is a manufactured item that becomes its own feeder when torn on dotted lines.

'Disease-Free' Hog Project Described

LINCOLN, NEB. — "Disease-free pigs mean more money for you" is the message to Nebraska farmers in a new publication of the Agricultural Extension Service. The circular describes the "disease-free" hog project developed by the University of Nebraska Agricultural Experiment Station.

"Disease-free" pigs are taken from a sow by surgical means and reared in isolation from other swine. They are free from major diseases because they did not have contact following birth with their mothers or other swine that might have been carriers of Atrophic Rhinitis, Virus Pneumonia and bloody scours.

"Disease-free" pigs may be placed on farms that have had no swine population for at least six weeks and grown to maturity in approximately the usual manner.

These "disease-free" pigs have shown a 20-25% market advantage, reported Dr. E. Crosby Howe, University of Nebraska Extension animal hygienist. The chief advantages are: More pigs per litter go to market, pigs go to market 2-4 weeks earlier, and more pork per pound of feed consumed.

Trade small samples like this

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KING-SIZE SAMPLE

trade up to reliable moisture testing . . . trade for the

Steinlite 500-RC

For years the standard of the grain trade, Steinlite moisture testers are more widely used than all other makes of testers combined. It didn't just happen that way . . . years of research and improvement have been invested in every Steinlite model.

And now the new 500-RC with the new king-size sample tops them all! Here's how the Steinlite 500-RC gives you more of everything you need for better moisture testing:

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INSTANT ACCURACY—Make perfect tests of grain right from the drier or samples of mixed moisture content in seconds . . . no need to wait hours for moisture equalization.

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WORTH LOOKING INTO

NEW PRODUCTS • NEW SERVICE • NEW LITERATURE

DESCRIPTIONS OF NEW AND IMPROVED PRODUCTS AND SERVICES PROVIDED BY MANUFACTURERS AND SUPPLIERS ARE PRESENTED IN BRIEF FORM. FOR ADDITIONAL INFORMATION, PLEASE USE THE ACCOMPANYING COUPON.

No. 7473—One-Man Hog Scales

A portable one-man hog scale with an adjustable squeeze chute has been announced by Precision Equipment Co. A double-hinged gate serves as a sorting gate, and with the squeeze

chute, one man can castrate, vaccinate or ring pigs. The scale accurately weighs ½ to 750 lb., the company says. Details are available by checking No. 7473 on the coupon and mailing to this publication.

No. 7485—Enzyme Activator Literature

Biochemical Corporation of America has released a four-page bulletein containing information on Silo-Zyme, an enzyme activator. The literature contains reproductions of laboratory analysis reports which used Silo-Zyme in the tests. Results of the tests are tabulated and conclusions drawn by the company. Copies are available upon request. Check No. 7485 on the coupon and mail to this publication.

No. 7493—Pellet Cleaning Shoe

The availability of a bulletin describing the Sprout-Waldron double deck pellet and crumbles cleaning shoe has been announced by Sprout, Waldron & Co., Inc. Bulletin 120-B illustrates and discusses a compact 60 in. by 72 in. unit for handling both pellets and crumbles without switching screens. A discussion of the "Shur-Shake" self-balancing drive is included. A two-color flow diagram showing schematically how the unit is used to grade pellets and crumbles without switching screens is presented. Check No. 7493 and mail for copies.

No. 7484—Vibratory Feeder Catalog

Syntron Co. announces publication of a catalog on vibrating feeders. The illustrated 32-page catalog contains descriptions, data and specifications for the company's line of six small-capacity, four heavy-duty and three extra heavy-duty standard electromagnetically vibrated feeders. Also included is information on three pneumatic and hydraulic feeders. Other company feeders are discussed and typical installations are illustrated. A variety of application diagrams are presented. For copies of the catalog, check No. 7484 on the coupon and mail to this publication.

No. 7492—Wall Chart

"Official Grain Grading Information" is the title of a wall chart which has been prepared by the Burrows Equipment Co. The chart contains the latest changes made by the U.S. Department of Agriculture concerning corn and oats standards, (to be effective Oct. 2 and June 1, respectively). Other subjects covered include durum wheat, varieties of barley, soybeans, spring wheat, white wheat, mixed wheat, flaxseed, sorghums, rye, winter wheat varieties and minimum analytical portions recommended for inspection work. The chart is being offered by the company to persons in the grain and feed trade, and free copies are available by checking No. 7492 on the coupon and mailing.

No. 7490—Procaine Penicillin

A specially-coated procaine penicillin has been introduced by the agricultural and industrial products division of Eli Lilly & Co. The product is marketed under the trademark Micro-Pen. A process developed by Lilly is used to coat each penicillin crystal to preserve its stability under feed manufacturing and storage conditions. According to company literature, experiments with broiler feeds showed Micro-Pen retained as much or more antibiotic activity than other penicillins of greater particle size in both pelleting and Arnoldization tests. For details about the new product, check No. 7490 on the coupon and mail.

No. 7491—21-Hole Laying Nest

A laying nest designed for all light breed layers has been announced by Oakes Manufacturing Co. The nest entrance is 7¾ in. wide by 8½ in. high, which company literature says eliminates the broken and dirty egg problem because of the smaller compartment. Twenty-one nests are contained in the unit, which has overall dimensions of 27⅝ in. high, 12¾ in. wide and 57⅞ in. long. Because of the size of the nests, no more than one bird can enter the same nest section. All metal construction gives nests substantial strength and durability, it was stated, and the ends and partitions are perforated and the backs of the nests are open for air circulation. For additional information and literature, check No. 7491 on the coupon and mail.

No. 7486—Bulletin On Masks

An illustrated, full color bulletin on masks for dust, paint and other hazardous jobs, has been prepared by Flexo Products, Inc. The bulletin contains information about the firm's line of Flex-a-Foam dust masks, giving specifications, prices and capabilities. The Flex-a-Prene paint mask is also covered in detail. Illustrations of both types of masks plus a cartoon drawing of a case history of a mask user are included. For copies, check No. 7486 on the coupon and mail to this publication.

No. 7487—Shipping Equipment Booklet

An eight-page, illustrated booklet describing a line of bagging and shipping equipment is being distributed by K. E. Savage Co. The booklet contains information about shipping

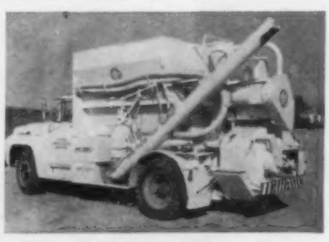
mills, sewing machine stands, horizontal and inclined belt conveyors, truck loading conveyors and other equipment. Schematic drawings of a bulk shipping feedmill, fertilizer hopper system and fertilizer bulk shipping mill are given. For copies, check No. 7487 on the coupon and mail to this publication.

No. 7488—Broiler Test Suggestions

A single page set of suggestions on how to conduct comparison tests on different breeds of broilers has been issued by Bowman-Martin Development Breeding Farms. "Suggestions for Field Testing and Evaluating Different Broiler Crosses under Commercial Growing Conditions" outlines the nine steps that should be taken to insure accurate reliable comparisons. Copies are free by checking No. 7488 on the coupon and mailing.

No. 7489—Dual Unloading System

Availability of both air and auger unloading facilities for its mobile formula feed blender has been announced by Barnard & Leas Manufacturing Co. Because air unloading has advantages under certain conditions and some types of farm storage facilities need an auger unloading



system, the company felt it could offer the maximum in unloading flexibility with the dual system. The auger conveyor is powered by hydraulic drive and has hydraulic positioning control for ease of handling, company literature said. The air unloading system provides means for reaching bins, overhead storage areas and other points not easily served by the auger. Details about the dual system can be obtained by checking No. 7489 on the coupon and mailing to this publication.

Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number on the coupon and forwarding it to Feedstuffs.

No. 7445—Reprint price list, Amer-

Send me information on the items marked:

- ☐ No. 7473—One-Man Hog Scales
- ☐ No. 7484—Vibratory Feeder Catalog
- ☐ No. 7485—Enzyme Activator Literature
- ☐ No. 7486—Bulletin on Masks
- ☐ No. 7487—Shipping Equipment Booklet
- ☐ No. 7488—Broiler Test Suggestions
- ☐ No. 7489—Dual Unloading System
- ☐ No. 7490—Procaine Penicillin
- ☐ No. 7491—21-Hole Laying Nest
- ☐ No. 7492—Wall Chart
- ☐ No. 7493—Pellet Cleaning Shoe

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No. 7446—Suspended - conveyor weigher, Thayer Scale Corp.

No. 7447—Automatic checkweigher, Toledo Scale Corp.

No. 7448—Bin design booklet, Sprout, Waldron & Co., Inc.

No. 7449—Sodium phosphate bulletin, Monsanto Chemical Co.

No. 7450—Enzyme feed fortifier, Pabst Brewing Co.

No. 7451—Temperature system, Rolfes Electronics Corp., division of Rolfes Grain Aeration Companies.

No. 7452—Equipment leasing study, Foundation for Management Research.

No. 7453—Bag tear strip, Union Bag-Camp Paper Corp.

No. 7454—Bin level indicator, Bin-Dicator Co.

No. 7455—Bulk transport, Dorsey Trailers.

No. 7456—Egg cooler humidifier, Master-Bilt Manufacturing Co.

No. 7457—Pig feeder, Fairfield Engineering & Manufacturing Co.

No. 7458—Poultry catalog, Babcock Poultry Farms, Inc.

No. 7459—Pneumatic handling equipment, Ripco, Inc.

No. 7460—Hydraulic drive mechanism, Sprout, Waldron & Co., Inc.

No. 7461—Packaged feeder, Fuller Co.

No. 7462—Vibration inducer, Martin Engineering Co.

No. 7463—Egg vendor, Tobias Enterprises.

No. 7464 — Overhead roller mill, Automatic Equipment Manufacturing Co.

No. 7465 — Automatic equipment bulletins, Thayer Scale Corp.

No. 7466 — Carbide cutting edge, Gustaf Peterson, Inc.

No. 7467—Equipment catalog, Syntron Co.

No. 7468—Hammermill, J. B. Sedberry, Inc.

No. 7469 — Air vibrator, National Air Vibrator Co.

No. 7470 — Bird repellent light, Trippe Manufacturing Co.

No. 7471—Poultry watering trough, Leach Manufacturing Co.

No. 7472 — Belt conveyor bulletin, Sprout, Waldron & Co., Inc.

No. 7473—One-man hog scales, Precision Equipment Co.

No. 7474—Egg oiling method, Anderson Box Co.

No. 7475—Dust sampler, Day Co.

No. 7476—Retractable top, Productive Acres Manufacturing Co.

No. 7477—Feed fortification, Specifide, Inc.

No. 7478—Bulletins on Eastrone, Eastern Laboratories, Inc.

No. 7479—Power loader, International Harvester Co.

No. 7480 — Testing instrument, Seedburo Equipment Co.

No. 7481—Magnesium bins, Tote Systems, Inc.

No. 7482—Pig parlor cleaner, James Manufacturing Co.

No. 7483—Leasing plan, Nationwide Leasing Co.

New Processing Plant

LAWRENCEVILLE, GA. — Stockholders will provide most of the broilers for the Lawrenceville Poultry Co., a processing firm which is to open here soon in the plant of the former Allied Poultry & Egg Co. The plant is being renovated and equipped to process 100,000 to 125,000 broilers a week at capacity. Blake Davis, Knoxville, Tenn., one of the stockholders, will be manager. Other stockholders include Griffin (Ga.) Grocery Co.; Spencer Overstreet, Wadley, Ga.; E. D. Riley, Jr., Ashland, Ala., and Tanner Hardware Co., Winder, Ga. It was reported that stockholders will provide all but about 30,000 broilers of the plant's weekly production.

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Tests With Hygromycin Conducted at S. D.

BROOKINGS, S.D. — Hygromycin fed to growing-finishing pigs from weaning to market weight gave complete control of large intestinal roundworms in recent trials at South Dakota State College, according to Dr. Richard C. Wahlstrom, department of animal husbandry.

However, Dr. Wahlstrom said he recommends that this antibiotic be fed only until the pigs weigh about 100 lb., "where it will give good, although in some cases not complete, protection against roundworms." From 100 lb. to market weight, hygromycin appeared to reduce the amount of feed the pigs ate and they gained slower, the researcher said.

Dr. Wahlstrom said he feels the best over-all results can be expected from feeding hygromycin plus another antibiotic to 100 lb., and that thereafter it is best to continue to feed only the other antibiotic until the pigs are ready for market.

"Trial results showed that a combination of hygromycin and Aureomycin fed from weaning to 100 lb. increased gains by 22% over pigs that received no treatment. Fed as the only antibiotic for the same period, hygromycin increased gains 12% and Aureomycin 6%," Dr. Wahlstrom said.

Opens New Elevator

OSCEOLA, ARK. — River Grain Corp. of Osceola, a division of H. A. M. Grain Co., Coffeyville, Kansas, recently held the formal opening of its new 510,000-bu. elevator here. Tentative plans include the expansion of the Osceola elevator to a capacity of between 1 million and 1.5 million bushels. H. A. M. officials said the new facility brings to 13 the number of elevators the company operates in Kansas, Oklahoma, Mississippi and Arkansas.

Dates Announced for Oklahoma Conference

STILLWATER, OKLA.—The 1959 Oklahoma Formula Feed Conference will be held Oct. 23-24—a Friday and Saturday — instead of the usual Thursday and Friday schedule, it has been announced by the conference chairman, Dr. Rollin H. Thayer, Oklahoma State University poultry science department. The conference will be at Oklahoma State University.

Dr. Thayer noted that a home football game is scheduled for Oct. 24, and that the usual conference schedule was changed so those attending the conference would have the opportunity to also attend the football game with Wichita University. Additional information about the conference may be obtained by writing Dr. Rollin H. Thayer, poultry science department, Oklahoma State University, Stillwater, Okla.

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AND NO MAINTENANCE REQUIRED".....

Strong Scott

that's how James Schulte, Manager of Farm Service Company, Mediapolis, Iowa, described his Strong-Scott Quick-change Hammermill.

James Schulte, Manager, right, offers complete service to customers, in the modern office of Farm Service Company.

From remote controls on the main floor, any one of five sectionalized screens offering "vortex grinding" may be inserted into the Hammermill without shutting down the mill.

Approximately two years ago the Farm Service Company suffered a fire that destroyed much of their property. "We contracted the **T. E. Ibberson Construction Company** of Minneapolis, to build us a complete new addition," said Jim, "which included installation of a Strong-Scott Hammermill and Triple Action Mixer."

"We grind on the average of five hours a day and service an area of about eight miles radius of Mediapolis," said Jim. "Even with a 100 H.P. motor on the mill and 30 H.P. on the blower," he added, "our electric costs are kept at a minimum because we don't have to stop the Hammermill to change screens between grinds."

"At Farm Service Company, mixing has become 'just a push button operation,' with the Strong-Scott Triple Action Mixer. We mix a three ton batch in five minutes," said Jim, "and our customers are very pleased with the results."

Located over head in the driveway at Farmers Service Company, Mediapolis, Iowa, is a Strong-Scott three ton Mixer with positive-action chain drive.

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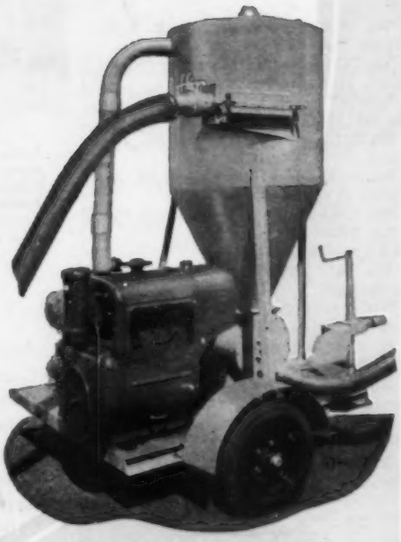

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Minnesota Studies Outlined at Seminar

ST. PAUL—University of Minnesota researchers reviewed recent Minnesota experimental work conducted with livestock at the April 21 Twin City Nutrition Seminar at the university. Staff members of the college of veterinary medicine and department of animal husbandry discussed bloat, swine and beef nutrition.

Dr. W. J. Aunan said studies at Minnesota have indicated that, from a carcass quality standpoint, cattle on stilbestrol should be fed for as long a period as they normally would be fed without stilbestrol.

Dr. Aunan reported also that for optimum carcass condition the stilbestrol implant level should be in the 24-30 mg. range for the feeding period.

Dr. O. E. Kolari reported intermediate results of incomplete tests comparing pelleted with non-pelleted cattle feeds. He said average daily gains for the four test rations at the time of latest calculation were: Baled hay and ground ear corn, 1.83 lb.; pelleted hay and ground ear corn, 2.09 lb.; baled hay and pelleted ear corn, 1.94 lb., and pelleted hay and pelleted ear corn, 1.91 lb. The variation of increased efficiency produced by pelleting either the hay or the corn or both over the non-pelleted ration was from 7.5 to 9.2%, Dr. Kolari reported.

Grub Control

Success in controlling cattle grubs with Co-Ral, a systemic insecticide, was reported by Dr. J. C. Meiske. Beef calves used in stilbestrol tests were divided into two lots—one of them sprayed with the systemic insecticide.

Dr. Meiske said the treated calves averaged half a grub apiece, with some of them grub free, while the untreated calves had an average of 11 grubs each.

He also gave a progress report on cattle wintering studies at the Rosemount station involving comparisons of alfalfa, oat and corn silages, with and without protein supplement.

Dr. A. L. Harvey informed the seminar group that the university is in the process of moving its beef herd from the St. Paul campus to the Rosemount station.

Discussing swine experiments involving protein, Dr. R. J. Meade reported that higher protein levels resulted in significantly larger loin area at the 10th and last ribs. He discussed also tests on iron compound injections for pig anemia and on feeding of antibiotics.

Bloat Discussion

With a fiberglass-covered heifer stomach at his side for demonstration purposes, Dr. A. F. Sellers, college of veterinary medicine, described rumination action as a background to a discussion of work being done at Minnesota and other stations on bloat.

He said work at South Dakota has been concentrated on differences in the chemical composition of alfalfa and that the relationship of saliva to bloat is being studied at Michigan. According to Dr. Sellers, the key to bloat control is finding the cause and there is much yet to be done in this area of experimentation.

Answering a question from the floor, Dr. Sellers reported that the effectiveness of antibiotics on bloat has been, in general experience, of temporary benefit only. He noted, however, that there have been a few reports of a more optimistic nature.

University of Minnesota researchers will discuss experimental work in sheep, dairy and poultry nutrition at the May 19 Twin City Seminar, which will be the final meeting of the current year. R. M. Edstrom, Glencoe (Minn.) Mills, Inc., will be chairman of the meeting.

APHF Expects Large Turnout at Convention

KENDALLVILLE, IND. — The "critical problems existing in the poultry industry" are expected to bring a heavy attendance at the annual American Poultry & Hatchery Federation convention in St. Louis July 21-23, Vern Steckley, APHF president, said here recently.

"When critical problems face the industry, hatcherymen like to get together," he said. "It restores their confidence."

He said a turnout of from 4,000 to 5,000 hatcherymen, breeders, feed mixers and dealers and producers is expected at the convention. The convention at Cleveland a year ago had an attendance of 4,308 persons, he said.

Educational sessions will be scheduled to insure time for visiting and viewing of exhibits. Tentative plans call for educational sessions the afternoon of July 21, the morning of July 22 and the afternoon of July 23.

Also planned are a men's stag breakfast and a ladies' luncheon July 22. The convention will conclude with a banquet the evening of July 23.

Tickets for a night baseball game July 21 are available through APHF. Also scheduled during the convention week is the Broadway musical, "Fanny," and night cruises on the S.S. Admiral. Tickets for the musical and the cruise will be on sale in the registration area of Kiel Auditorium during convention hours.

Tranquilizer Value Reported by VPI

BLACKSBURG, VA.—Animal husbandmen at Virginia Polytechnic Institute, reporting on tests elsewhere, say that in 31 feeding trials with beef cattle the use of several tranquilizers at various levels gave average gains 9% greater and feed efficiency 7% greater than where the tranquilizers were not used.

They say the main possibilities for use of tranquilizers are in periods of stress—during shipping, weaning or drastic changes in routine. They also believe tranquilization for shipping to market holds promise.

UNDERGOING IMPROVEMENTS

PERRY, IOWA—Whiton's Feed & Milling Co. here is undergoing an extensive improvement program for increased bin capacity and speeded up loading operations. In addition to elevator changes, the firm will add three 18-ton bins for concentrates.

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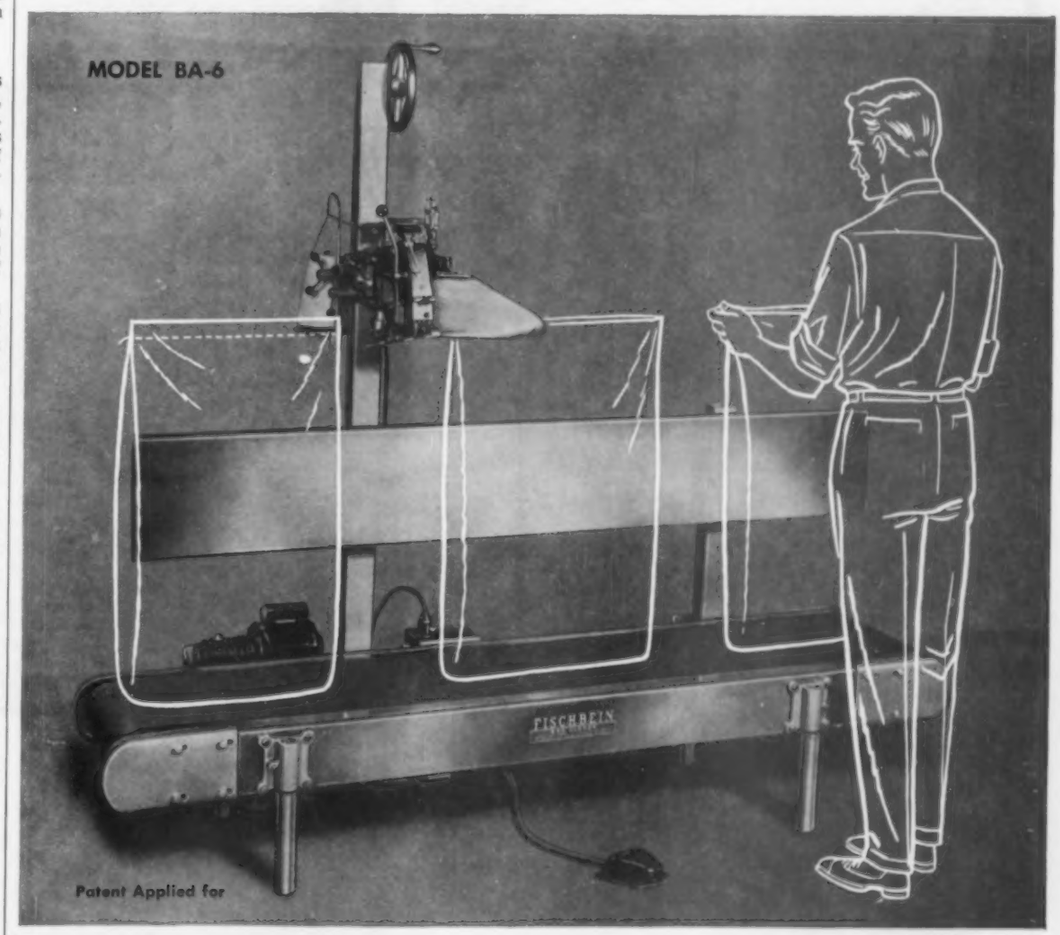

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Use of Tranquilizers Told on Maryland Tour

COLLEGE PARK, MD. — The use of tranquilizers in beef cattle feeding was demonstrated for Maryland cattlemen and six farmers from the British Isles as a part of the recent second annual Maryland Beef Cattle Producers tour in the Hagerstown area.

At the Spring Meadow Farm, Smithsburg, Dr. Quentin F. McDonald, Schering Corp., Bloomfield, N.J., said deep intramuscular injections of tranquilizer drugs are useful in behavioral control of animals being treated and fitted; for adapting an animal to a new environment, and as a protection against lowered resistance to disease because of stress factors associated with movement and transportation.

Dr. McDonald told the group that tranquilizers used on animals going into the sale ring were credited with raising the selling price of steers because they were calm and less nervous in the ring. Tranquilizers, he said, enable a feeder to get cattle adjusted to a new feed lot quicker and animals go on full feed faster.

Another advantage of using such drugs is reduced shrinkage in transit, he said.

Dr. McDonald said he does not think that tranquilizers should be used on 4-H project animals, because this would be a substitute for experience gained through handling and training these animals.

Other phases of the tour included the presentation of information on beef production by a number of specialists from the University of Maryland College of Agriculture and Extension Service, beef breeders and representatives of commercial firms.

In addition to Spring Meadow Farm, stops were made at Mt. Airy Stock Farm, Clear Spring, and Renwood Farm, Hagerstown. Tour guests saw on all three farms variations of bulk feeding systems which distribute feed lengthwise of the bunk from a self-unloading transport or deposit it into one end of the drag or screw-equipped bunk.

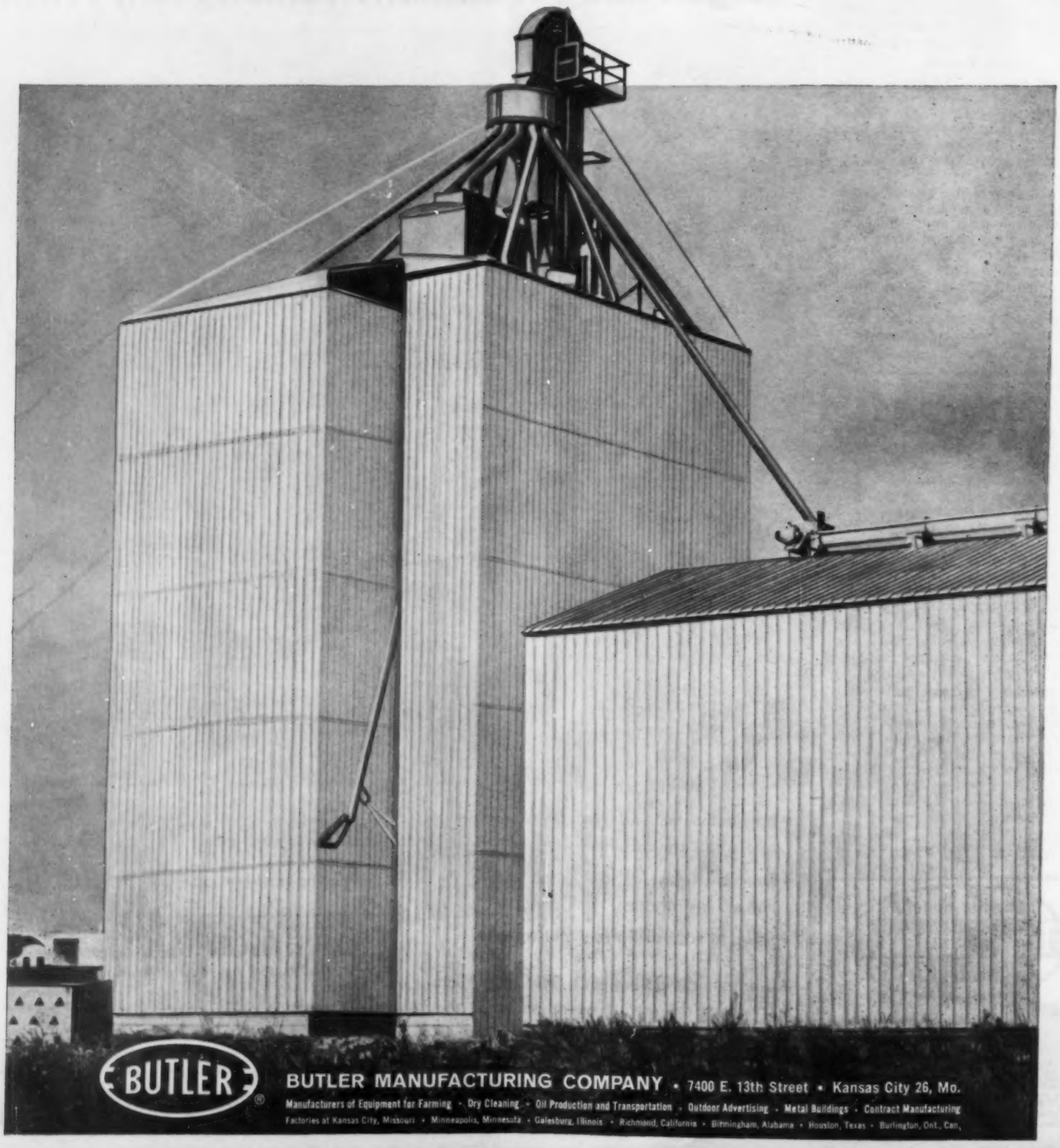
Remodeling Completed

NEW CARLISLE, OHIO — H. E. Brubaker Elevators, New Carlisle, recently completed the rebuilding of its feed plant to equip it for bulk handling of feeds. Included in the construction was the installation of 42 bulk bins, three special elevator legs, three screw conveyors, a grain dump and drag line, a feed dump, corn crusher, sheller and cleaner, feed crimper, four crushed cob holding bins, molasses mixer and storage tanks and other equipment.

NEW FEED MILL PLANNED

DORCHESTER, WIS.—Stockholders of the Dorchester Cooperative Produce Assn. have voted to build a new feed mill and elevator. The new building, to be of steel construction 120x60 ft., will replace the present feed store facilities across the street from the co-op grocery.

A dramatic new look in elevators... compact and modern as today's newest skyscrapers... all-steel for durability, cleanliness and fire-safety. Butler Square Bolted Tanks permit grade separation in capacities to meet your requirements... maximum capacity in compact areas – no space lost between tanks... all the advantages of traditional shape. Fabricated by Butler, job-engineered by your authorized Butler Bolted Tank Contractor. Contact him for your country elevator and annex storage requirements, or write direct.



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USDA Says Seaway Won't Cut Shipping Costs to East Coast

WASHINGTON—Shipments of grain over the St. Lawrence Seaway from major grain producing areas for delivery to U.S. eastern and southeastern milling points apparently will be no cheaper than they are over existing routes.

This is a conclusion drawn by U.S. Department of Agriculture economists in a study of comparative costs and charges. Data and conclusions from the study are presented in a 149-page marketing research report.

The comparisons are based on studies of carrier costs and shipper charges for transporting grains by barge on inland waterways, by rail, by truck, by St. Lawrence shipping before use of the Seaway, and by combinations of these, in relation to prospective costs of shipping in ocean-going vessels from lake ports over the new Seaway and directly to foreign destinations.

Shipments to foreign countries through the Seaway can be made at costs substantially lower than the charges by present routes, the report said.

Chicago, Duluth-Superior, Toledo and other Great Lakes ports and many interior shipping points are expected to benefit from lower-cost transportation of grains to Europe, the Mediterranean, Africa and, in some degree, South America, the report said.

A copy of the report, "Potential Effects of St. Lawrence Seaway on Costs of Transporting Grain," Marketing Research Report No. 389, may be obtained from the Office of Information, USDA, Washington 25.

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Cooperative Outlines Use of Coccidiostats

RICHMOND, VA.—Southern States Cooperative has announced the use of new coccidiosis control programs in connection with its feeds.

SSC says in its publication, Service Guide, that it now recommends feeding starting and growing mash containing the coccidiostat Trithiadol for a 12-week period. The co-op called Trithiadol "a satisfactory coccidiostat" for replacement layers, chicks and for use in broiler feed.

An alternate program—using the vaccine Cocci-Vac—is recommended by SSC for breeder flocks and commercial layers, but not for broilers on SSC contract nor for turkeys.

Trithiadol is being used in SSC starting and growing mash at all mills except the one at Seaford, where the mash is available with Unistat as the coccidiostat.

Service Guide said SSC replacement layer chicks should be fed starting and growing mash with Trithiadol for the first 12 weeks of life to aid in the prevention of coccidiosis, but if Cocci-Vac is used, Trithiadol may be discontinued at six weeks of age.

SSC recommended feeding of the mash with Unistat for the first 12 weeks or at least until eight weeks of age if Cocci-Vac is used.

Honor for Book on Linear Programming

AMES, IOWA—"Linear Programming Methods," a recently published book of the Iowa State College Press, Ames, has been named one of the top 90 business books of the year by the editors of Library Journal.

The book's authors are Dr. Earl O. Heady, professor of economics, Iowa State, and Wilfred Candler, lecturer in agricultural economics, University of New England, Australia.

The book's special purpose, say the authors, is to "place the general tool of activity analysis in the hands of individuals who are not primarily mathematicians or concerned with complicated mathematics." The authors explain how linear programming can be used by business and agriculture in their planning to maximize profit and minimize costs.

Plans Insecticide Study

NEW YORK—Systemic insecticides are being studied for their effectiveness in the control of northern cattle grubs by Dr. E. A. Tunnicliff, head of the veterinary research laboratory at Montana State College. The studies will be covered under a grant awarded to the college by the American Cyanamid Co. Among the systemics to be evaluated is Dimethoate, Cyanamid insecticide which has shown promise for treatment of late-stage grubs in the backs of cattle.

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B.	95	76	19	112	108	4	79%
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D.	68	52	16	68	64	4	78%
E.	74	38	36	79	72	7	81%
F.	83	69	14	78	76	2	85%
G.	60	34	26	44	39	5	81%
H.	36	27	9	28	26	2	77%
I.	16	11	5	16	15	1	80%
J.	32	16	16	28	25	3	81%
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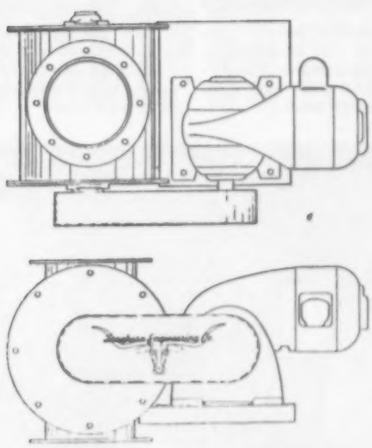

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Feed Tech Program Advances; Industry Urged to Help on Student Recruiting, Research

By ROGER BERGLUND
Feedstuffs Managing Editor

When a feed company builds a new mill, its job has only just begun. There are still the all-important jobs of providing operating personnel, seeing that the machinery operates smoothly, procuring raw materials and developing new markets for the product.

For the feed industry as a whole, there is a somewhat similar situation in the feed technology program at Kansas State University in Manhattan—except that there seems to be little difficulty in finding a market for the principal product, the feed tech graduates.

In addition to a capital investment in the program, the industry would appear to have some responsibilities in such things as help in providing certain types of personnel (support of research), procuring raw materials (new students), helping to assure smooth operation (advisory functions) and developing markets (employing the graduates).

It was back in 1952 that the only college degree program in the world designed to prepare the student in feed technology was started at K-State. Then, in 1954, through industry contributions of funds and machinery, a pilot feed mill was built and equipped for use in student training and research.

Now, several years later, just how do things shape up in the feed tech program? In general, those closest to the program feel things have gone very well. But, in a new college program as in a new feed plant, there are some problems, too.

The university and the department of flour and feed milling industries (of which the feed tech curriculum is a part) must, of course, have primary responsibility for the feed technology program. But the industry has a stake in the program which cannot end with the provision of some of the facilities. For one thing, obviously, there is the $360,000 investment in the mill building and machinery. But even more important is the actual and potential source of trained personnel and research information for an industry whose technology becomes more complex by the day.

Dr. J. A. Shellenberger, head of the milling department, feels that the program has shown very good progress and that the need for the program has been well demonstrated. Currently there are some 80 students in the four-year university program, with 16-20 graduates each year. And in those figures can be seen part of the problem.

Dr. J. A. Shellenberger, head of the department of flour and feed milling industries at Kansas State University, is shown in the pilot feed mill, standing by a gravity feeder.

Principal Problems

Going back to the feed plant analogy, there is no difficulty in selling the product. Demand is much greater than supply. Each graduate has an opportunity to be interviewed at least a dozen times by prospective employers. But, there are problems for the industry in connection with providing personnel and raw materials. These principal problems, according to Dr. Shellenberger, are:

1. Recruiting of more high-caliber students from among the high school graduates each year.

2. Support of research, which includes research personnel.

"The industry did a wonderful job in helping the feed tech program get started," said Dr. Shellenberger, "but more follow-through is needed in these two areas, in particular, if the program is to advance and render still more service to industry and agriculture."

An architect's drawing of the new building to be built for the department of flour and feed milling industries at Kansas State University. The new structure, which will include a new flour mill, will tie in with the existing feed mill building. The new building will replace office, laboratory and other facilities lost last year in a fire which gutted a building adjacent to the feed mill.

Also, the university people feel that the industry advisory function has not always been carried out as it might have been, and some changes in this aspect of the program are contemplated.

Speaking of research, Dr. W. H. Hastings, associate professor, pointed out a number of interesting projects which are in the works or in the planning stage. But, both he and Dr. Shellenberger noted, there is room for a lot more to be done. (Also see accompanying story.)

A number of companies and organizations in the industry have provided $400-a-year scholarships for feed tech students. In fact, there currently are 16 student recipients, but, actually, recruitment of good students is more of a problem than establishing scholarships, Dr. Shellenberger said. To obtain any scholarship at the university, a student must show evidence in high school of being a good student. And there have not been enough outstanding high school students interested in feed technology.

It is in this area of student recruitment that industry help is particularly important, it was pointed out. Actually, the feed tech problem is part of the broad problem of encouraging more students to enroll in agriculture. As Dr. Shellenberger noted, there are too few people telling the story of agriculture, too few explaining that it is a science, too few making others aware of the need for technologists.

The fact that agriculture has a good many problems actually creates new opportunities for the technically trained person — the person needed to help solve problems in harvesting, storing, processing, transporting and marketing.

As for formula feed, Dr. Shellenberger said, the industry must help tell the story of new technical aspects of the industry, requiring ingenuity and capacity just as great as in the field of rockets, for example.

One difficulty, the department head said, is that the industry may visualize trying to do too much, on too broad a scale. What is needed, he

• • •

Pilot Feed Mill Provides Opportunity For Research on Feed Milling Problems

The primary purpose of the feed technology program at Kansas State University is the university-level education of technically inclined young men who will enter the increasingly scientific feed industry. But the university's pilot feed mill, plus personnel and other facilities in the School of Agriculture, offers a special opportunity for research in feed technology.

While not extensive, some research has been under way for some time. In fact, a good deal of work related to feed was done by the milling department before the feed mill was built. Also, some of the class work, particularly on the graduate level, provides new research-type information.

Mixing Studies

Outlining some of the current research, Dr. W. H. Hastings, associate professor in feed technology, pointed out that a project sponsored by the Sprout-Waldron Foundation involves a study of micro-ingredient distribution in mixed feeds. There has been formal research before on particle mixing and unmixing, but this is the first time this sort of thing has been done with feedstuffs or materials as a carrier and with micro-ingredients. Dr. Hastings said the department, by using horizontal and vertical batch mixers and a twin cone mixer, is studying the efficiency of mixing and the resulting product. Factors influencing uniformity and segregation are being determined. These include such things as particle size, density, particle shape and electrostatic charge. A scientific paper on this work will be ready soon.

Getting under way in the department is some work to investigate the application of air mixing to feeds. This is an extension of some work on air mixing in the university's chemical engineering department. Dr. Hastings noted that air has been considered a means of conveying, classifying or separating materials, but now its use in randomizing or mixing is being checked. In the initial laboratory work, this involves applying air to material in a fluid bed column. With the application of air, the material is mixed.

The feed tech people also are involved in a USDA-sponsored project at the university to investigate the processing of grain sorghums and livestock and poultry acceptability of the feed.

This work includes studies of grinding, pelleting, cracking, steaming and crimping, water tempering and rolling, and pearling. It has been found, for example, that pearled grain sorghums make a good cereal base for canned pet food.

One researcher at the university is working on the fundamentals of grain storage, including the influence of temperature and moisture. The basic information obtained will be applicable in much of the feed industry.

Roughage Pellets

Some of the mill activities, carried out as a part of class work to demonstrate various operations, also can

(Turn to PILOT FEED MILL, page 170)

The pilot feed mill at Kansas State University includes facilities for carrying out all types of feed manufacturing operations. In this picture, Dr. W. H. Hastings, associate professor, is examining some roughage pellets.

said, is a selling job at the grass roots—personal contacts in high schools so that more students will be aware of the need and opportunity, so that more of them will discuss it among themselves.

He mentioned the example of one small firm in Kansas whose efforts resulted in the university's receiving 35 postcard inquiries from interested students. Ken Winterscheidt of the Winterscheidt Milling Co. in Seneca made appointments at high schools within a radius of 50 or 60 miles of Seneca. He showed a motion picture on the feed tech program which was produced by the Midwest Feed Manufacturers Assn. and explained the program to the high school students. Then he passed out postcards with which the young men could write in for more information. The result was stimulation of a good deal of interest.

Also, some 20 Kansas feed milling companies have been jointly advertising to young Kansans, trying to interest them in industry careers and the university program.

Efforts like these, plus talking with high school youths and determining their interests on an individual basis, will pay off in larger enrollment and an expanded source of qualified, trained technologists for feed and allied firms across the country, Dr. Shellenberger said.

Research Program

Commenting on feed technology research, he pointed out that milling department personnel and facilities, plus help where needed from other departments in the School of Agriculture, provide the basis for important research for an industry which faces a constantly increasing need for more fundamental knowledge of the various aspects of feed production.

With the facilities available, the department could take off on some thorough research programs.

However, said Dr. Shellenberger, the state of Kansas, through its support of the university has, in effect, been expected to support research of help to the entire industry. More industry support of research is needed.

"Industry people are continually sending in ideas for research," he said. "But we don't have any people sitting around waiting for things to do. This involves a problem common to any university and its budget procedure. All time of staff personnel, whether in teaching or research, must be accounted for in budgeting. Then, when a new problem is presented, there is no provision for anyone to handle it.

"What is needed is more industry support so that there will be funds to cover the salaries of research workers and provide any necessary supplies and facilities.

"Also, there is a problem in obtaining graduate students who would do research work. For one thing, there are currently so many attractive job offers in industry for new graduates that it is hard to persuade the students to stay on and do graduate work. With more support, it might be possible to encourage more graduate work.

"In addition some persons interested in graduate work in feed tech do not have the proper undergraduate training. For example, some people in agriculture are interested but do not have the necessary background in engineering, chemistry, etc.

"We hope that it will be possible to have some persons in industry come back to the university for feed tech research and teaching work."

The whole problem is not impossible, Dr. Shellenberger said, and can be worked out. But industry cooperation will be needed.

Industry Cooperation

Discussing the role of industry cooperation, Dr. Shellenberger noted that for some time there has been an industry advisory committee, made up of feed and allied men from all parts of the country. However, he said, this committee has not been active recently and may be dissolved.

This, he added, should not mean that cooperation with industry will have to be weakened. The feed tech program has a policy advisory committee which, for one thing, is designed to provide liaison between industry and the experiment station. The committee includes representatives of such university departments as poultry, dairy and animal husbandry, plus two industry members—Maurice Johnson of Staley Milling Co., Kansas City, and John Heimovics of Shanzer Mfg. Co., Kansas City.

"With this active committee as a nucleus," said Dr. Shellenberger, "sub-committees, including industry people, can be formed to work on such things as scholarships, research, curriculum and student recruitment."

One severe handicap which has faced the milling department for the past year has been the lack of adequate laboratory, classroom and office facilities. A fire last year gutted a building adjacent to the pilot feed mill. The mill was not damaged, but classroom and laboratory space was lost, causing some make-shift arrangements which involved scattering students all across the campus.

Rebuilding contracts have now been let. The renovation of East Waters Hall will bring back lecture rooms. Also a new structure, including a new flour mill, will provide adequate office and laboratory facilities for the entire department. This building, tied in with the feed mill building, will also include some added feed ingredient storage space and some grain storage and cleaning facilities which can be used in feed tech work. It is hoped that this will be ready by the early part of 1960. Still needed are some bulk storage facilities for the feed mill.

In addition to aiding in training, the new building will help make possible more research, Dr. Shellenberger pointed out.

Feed Tech Curriculum

As a refresher for persons interested in the feed tech program, Dr. Shellenberger briefly explained the feed tech curriculum. He noted at the outset that it is a university-type program and not a trade school. For example, a student must have basic scientific training in such things as chemistry, biology, mathematics and agriculture. Also he must receive some education in such things as oral and written communications, economics and the humanities.

"The student must have as broad a base as possible," Dr. Shellenberger said, "being taught fundamentals

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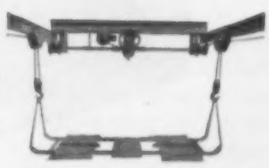

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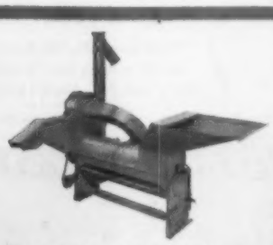

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that will be useful throughout his business and personal life. He cannot become involved entirely in details which are subject to change and may or may not be useful later."

The basic reason for the curriculum, the department head said, is to deal with physical and chemical mechanisms involved in feed manufacture. This means teaching such things as flow of materials, power, chemistry, engineering and other subjects which are fundamental in feed operations. It does not mean getting involved in all of the details of operation of a mixer or pellet mill, although students get a good introduction to such things.

The curriculum at the start includes such subjects as communications, mathematics, chemistry, physics, biology, drawing, survey and elements of milling, some animal and poultry husbandry, flow sheets and elements of feed manufacturing.

As the student advances, he gets into such things as principles of nutrition, market grading of cereals, anatomy and physiology, and more advanced work on milling and feed manufacturing. Also, most specialize in one of the three options—operation, nutrition or business administration. Laboratory and mill, as well as classroom, work is included. In all of this, the aim is to provide basic scientific knowledge so that the student can specialize later in various phases of feed manufacture.

The nutrition option, by the way, does not mean the graduate will be a nutritionist as such. Rather, it involves biochemistry along with other subjects so that the student will have same basic knowledge for supervision, administration or sales in fields related to nutrition.

The student in the operations option gets additional training in such things as mechanics, organic chemistry, engineering, advanced math, advanced feed technology and mill construction. Among junior and senior courses for the student in the nutrition option are microbiology, organic chemistry and biochemistry, vitamins, more math and feed analysis. Subjects in the administration option include accounting, business organization and finance, grain marketing, economics, sales management, business law, statistics, feed analysis and some additional chemistry.

Facilities of other departments at the university also are used in the training program—animal and dairy husbandry, for example. In addition, in connection with feed formulation, a student can become familiar with an electronic computer in the math department. Engineering also enters in, of course, as do such things as economics and bacteriology. With new developments like linear programming, students can take courses in other departments, or the milling department itself can offer new courses. The emphasis is on basic principles which can be applied in the feed industry, but the aim is to be flexible, Dr. Shellenberger said. This is one reason for having a curriculum committee from industry which appraises the program and suggests any needed changes.

All in all, said Dr. Shellenberger, good progress is being made, with industry interest and cooperation of real help. But, he noted, further advances and further service to industry and agriculture hinge in considerable measure on continued and expanded industry interest and support.

PILOT FEED MILL

(Continued from page 168)

help produce interesting information. For example, the department has been making some ⅞ in. complete pellets for dairy researchers which include 60% coarse-cut roughage and 40% concentrate. The roughage is hay ground over a 1-in. screen on the hammermill. Cows have eaten up to 60 lb. a day of the complete ration. And with the coarse grind, they have chewed their cud in a normal way.

A class project, which is laboratory work in a formula feed manufacturing class, has been to show how these pellets can be made. The work includes such things as flow problems with roughage, binning and the pelleting specifications.

A graduate level class, as part of its work, has been investigating hardness of calf pellets. With variations of steam and production rate, pellets of different hardness have been produced. In the dairy husbandry department, feeding results with the pellets are studied.

Students also have produced complete pellets for a lamb feeding study in the animal husbandry department. Pellets are fed from before weaning to market weight. A ¼ in. grind is used on hay for these pellets.

There also has been laboratory work on roll cracking milo and pelleting ground milo. These products then are used in metabolism studies.

Use Electronic Computer

A formula feed manufacturing class has done formulation work using an IBM-650 computer at the university. Dr. Hastings said that in one of the problems which used ingredient prices on a certain day to formulate a dairy feed, one ingredient kept coming into the answer until the price was doubled. Price changes can be used to obtain a new formula at five minute intervals.

The department does a good deal of feed processing and mixing work for other departments wanting rations for feeding trials. For example, all of the university's poultry feeds are made in the university mill. This is not a special research project, but is carried out as part of the class work, which trains students in equipment use and provides information on various feed tech problems.

Meanwhile, Dr. Hastings noted, the most interest from industry in possible research has pointed to such things as mixing liquids, pelleting and distribution of micro-ingredients in feeds. It is hoped that further work

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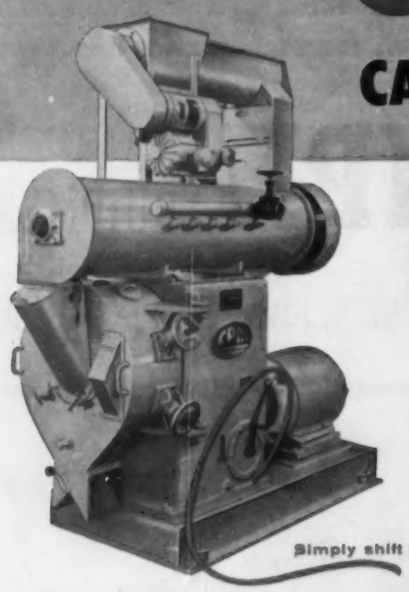

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Color		natural	natural	bright	
Subclinical Infection and Intestinal Coccidiosis		practically eliminated	outbreaks	Subclinical Infection present...unnatural brightness of pigmentation makes early detection difficult	

*Note: The point spread for Coccidiostat B ranged from a high of 119 to a low of 49—when Subclinical Infection was noted as a result of the build-up of coccidial oocysts, under relatively humid conditions. During this same difficult period the point spread for flocks on NiCarb varied from a high of 121 to 96.

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BIG TANK CARS—Shown are two "king size" tank cars recently used to ship soybean oil by Central Soya Co., Inc., Ft. Wayne, Ind. Each car was loaded with 20,000 gal. of oil. Between the two cars is a conventional 8,000-gal. car. The cars belong to General American Transportation Corp., and were being used by Central Soya on an experimental basis. Railroads report that substantial savings in freight can be realized by the use of the big cars for shipping food, chemicals, petroleum and other products.

can be done in these fields of investigation.

As for pelleting, Dr. Shellenberger said there is need for basic information on such things as the effect of pelleting on micro-ingredients. More information, he said, is needed on die temperatures. For this, special equipment, including special dies and temperature-sensing devices, is needed. He said the university also would like to do more work on pellet hardness.

Dr. Shellenberger pointed out that even before the feed tech program was started, the department had done work on heating of certain ingredients, and it had accumulated knowledge on biological changes in materials due to time, temperature, inert gas, etc.

Some of this sort of information from past or recent studies, said Dr. Shellenberger, can provide the basis for other projects, including things which are not immediately obvious.

While some good first steps have been taken, there is a need and opportunity for a great deal more research.

TAKES OVER FEED MILL

KEWASKUM, WIS. - The Washington County Farmco Cooperative took over the management of Koch's Mill here recently.

Southern Group's Meeting June 9-10

HOT SPRINGS, ARK. — The program for the 17th annual convention of the Association of Southern Feed & Fertilizer Control Officials, to be held June 9-10 at Velda Rose Motel, Hot Springs, was recently announced.

The program is as follows:

Morning, June 9—Presidential address by Bruce D. Cloaninger, director, department of fertilizer inspection and analysis, Clemson (S.C.) Agricultural College; "What's Behind the Feed Bag," Dr. E. I. Robertson, director of nutrition, John W. Eshelman & Sons, Lancaster, Pa.; "Making a Must of a Miracle," Dr. R. L. Beacher, director, southwestern regional office, National Plant Food Institute, Fayetteville, Ark., and "Pesticides — Some Observations on Their Regulation," J. A. Noone, National Agricultural Chemical Assn., Washington, D.C.

Afternoon and evening, June 9—"Value of County and Area Fertilizer Consumption Statistics in the Agricultural Extension Service Education Program," Woody N. Miley, extension soils specialist, Agricultural Extension Service, Little Rock, Ark.; "The Effects of Developments in the Fertilizer Industry on Regulatory Programs," Arthur Gentry, plant manager, Arkansas Plant Food Co., Little Rock; "The Arkansas Soil Testing Program—Relation to Recommended Grades and the General Fertilizer Program," Dr. D. A. Hinkle, head, department of agronomy, University of Arkansas; "Insect Control as Affected by Resistance and Formulation," Dr. Charles Lincoln, head, department of entomology, University of Arkansas; "Fertilizer-Insecticide Mixtures for Control of Soil Insects in Arkansas—Good or Bad?", Grover C. Dowell, extension entomologist, University of Arkansas, and banquet address by Dr. John T. Caldwell, president, University of Arkansas.

Morning, June 10—"Recent Developments in Energy and Protein Levels in Swine Feeding," Dr. Paul Noland, associate animal husbandman, University of Arkansas; "Feed Registration and Control Problems from a Feed Manufacturer's Viewpoint," Dr. S. R. Johnson, director of nutrition, M.F.A. Milling Co., Springfield, Mo., and "Factors in Developing Grades and Standards for Blackstrap Molasses for Feeds," Dr. Luther Richardson, professor of biochemistry and nutrition, Texas A&M.

The association's executive session for control officials is scheduled for June 8, and the convention will close with a business meeting late in the morning of June 10.

Meat Use in Canada

OTTAWA — The per capita consumption of red meats in Canada during 1958 was 138.1 lb.—a decrease of 4.5 lb. compared with 1957, according to recent figures reported by the Dominion Bureau of Statistics.

This decrease occurred despite a rise of 5.6 lb. per person in the apparent consumption of pork, and is directly attributable to a 10 lb. per capita decrease in beef consumption, which reflects the rising price of beef in 1958 following a flow of slaughter and feeder cattle to the U.S.

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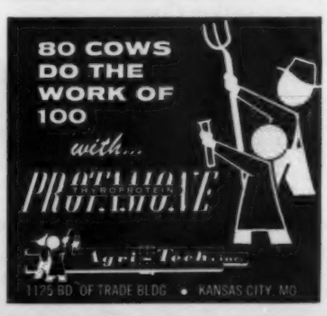

Economist Sees Lower Total Feed Output in 1959

URBANA, ILL. — Despite a prospective corn acreage increase of 12%, feed production in 1959 is likely to be smaller, not larger, than it was a year ago, according to L. H. Simerl, University of Illinois agricultural economist.

In his recent Illinois Farmers' Outlook Letter, a publication of the agricultural extension department at the university, Mr. Simerl said "headline hunters and farm alarmists went into a panic" over one item in the U.S. Department of Agriculture report of prospective plantings issued in March.

The panic producer was the announcement that farmers planned to increase corn acreage by 12% over last year. From this, Mr. Simerl said, "the expounders conjured up a vision of an unmanageable flood of feed pouring from our fields next fall.

"Before the rest of us become unduly alarmed by their vision," he said, "we ought to study some of the other pertinent facts to get a more realistic picture of the feed situation. When we do this, we find that total feed production is likely to be smaller, not larger, this year than it was last year."

The "other important facts" listed by Mr. Simerl were the following:

"1. Farmers plan to plant 83.9 million acres of corn this spring, or 9.3 million more than last year. Some of this increased acreage will be on land that farmers put into the soil bank and corn acreage reserve program last year. In general, this land was in the poorest areas of the poorest counties. Taking it out of production did not materially cut corn output. And planting it back to corn probably will not add much to the corn crop.

"2. Farmers plan to cut the acreage of most other feed crops. As compared with last year, they plan to produce 2.4 million acres less of oats, 2.5 million less of hay, 1.7 million less of soybeans and 0.7 million less of sorghum. (Farmers planned to increase plantings of barley by 0.8 million acres.)

"3. Average per-acre yields of feed grains were 14% higher in 1958 than ever before. This was not due to any big increase in the use of fertilizer, but to unusually favorable weather over most of the U.S. The only drouth area was a strip in North Dakota and Montana along the Canadian border. Such favorable weather and high yields are not likely to be widespread this year.

"4. If farmers plant and harvest the acreage of grains reported in March—and if the acre yield is equal to the high average of the past three years—total production of feed grains would be 153 million tons, or 3% less than last year.

"5. If farmers harvest the acreage of hay reported in March—and if the acre yield is equal to the high average of the past three years—the production of hay would be 114 million tons, or 7% less than in 1958. Ranges and pastures, too, are likely to produce less feed than they did in 1958.

"6. If farmers plant and harvest the indicated acreage of soybeans—and if the acre yield is equal to the high average of the past three years—the production of soybeans would be 511 million bushels, or 11% less than last year. Soybeans produce most of the protein supplement used in rations for livestock and poultry.

"7. While feed production seems quite likely to be reduced this year, the number of grain-consuming animals—hogs, poultry and beef cattle—are increasing. Thus, feed production will probably be more nearly equal to feed use in the year beginning July 1 than it is this year."

Mastitis Study Grant

PHILADELPHIA — The University of Pennsylvania School of Veterinary Medicine has been awarded a grant of $4,071 by the Cooperative Grange League Federation Exchange, Inc., Ithaca, N.Y., for research in mastitis, according to Dr. Mark W. Allam, dean of the school.

The grant will be used by Dr. Monica Reynolds, assistant professor of physiology at the veterinary school, to continue and expand her study of blood circulation in the cow's mammary gland. It will make possible the purchase of both diseased and healthy cows necessary for her research.

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Producers, Feed Firm, Markets Coordinated in New 'Farm-to-Market' Egg Program in Kansas

By ROGER BERGLUND
Feedstuffs Managing Editor

Quality egg programs, most of them integrated or contract type operations, are springing up or expanding rapidly in various parts of the country. While the arrangements vary, a good share of the programs rather closely resemble one another.

In the Topeka, Kansas, area, a program is just getting under way which differs from most plans in several respects — not only in the basic arrangements but also in some of the details of the operations. It's a type of program, predict its sponsors and participants, which the poultry and feed industries will be seeing more of.

As outlined by those involved in the project, some of the principal features of this egg program are:

- There is "coordination" of persons and firms along the farm-to-market channels — including producers, feed company and the market — rather than "integration." There are some short-term formal agreements among the participants but no contracts as such.
- No one firm such as a feed company or an egg processor has organized or controls the program, although there is coordination of the program by a specialized business which is not actually one of the production - marketing group. One observer said a program of this type offers producers and others the "advantages of integration without integration."
- Producers themselves take an active part in formulating plans and policies and in helping to steer the operations.
- Egg prices and margins for producers, as well as ingredient prices, are a factor in pricing of feed used in the program. As producers' margins vary, so do the margins of the feed manufacturer. The participating feed firm's margin over ingredient costs will change with the margin between production costs and egg prices.
- No feed salesmen or dealers are involved, and incentive for servicemen is based on producers' efficiency rather than feed tonnage. A serviceman can earn more if his producers use less feed to produce their eggs.
- To date, any required financing of producers has been handled through local banks. The feed company is prepared to do some financing, but banks are described as being "very willing to go along" on the program.
- An insurance policy is carried to insure the producer against loss if the egg buyer should be unable to pay for the eggs after agreeing to take them.
- There is no guaranteed price or income for the producer, but the producer is assured of the top market price for eggs meeting quality specifications.

The Topeka Mill & Elevator Co. is the feed firm involved in the program. It manufactures and distributes the feed, provides a serviceman and collects and transports the eggs to market. Most of the eggs are purchased by major markets in Kansas City.

Don Geiser (left), manager of the Topeka Mill & Elevator feed department, and Mel Miller, president of Mel Miller & Co., are going over some of the details of the "Farm-to-Market" egg program in the Topeka area.

Coordinating the entire operation is Mel Miller & Co., Inc., Kansas City, a relatively new consulting firm which is specializing in "Farm-to-Market Coordination" in addition to providing production, management, nutrition and other consulting services for the feed industry.

The Miller company's coordination involves such things as arranging for the market; formulating the feed; providing management and other recommendations for producers; help in providing chicks or starter pullets; and working in the field in various ways with the feed manufacturer, hatcherymen and producers as well as the egg buyer—in general, it was indicated, providing the "staff functions" for a program of this type. For this service, the firm receives a fee from the feed manufacturer based on the feed business involved.

The program, which has been getting started during the first months of 1959, currently is nearing a total of 50,000 layers. The goal is 200,000 birds. The producers, now ranging in size of operations from 500 to 5,000 birds, are within a radius of 50 to 75 miles of Topeka. The Miller company is currently setting up similar programs in other areas, including swine as well as poultry. As for swine, Topeka Mill & Elevator, for example, is planning to get into a coordinated hog program soon.

"Rather than integration under one management," explains president Mel Miller of the Miller firm, "this program means that each segment of the operation from farm to market is handled by a specialist in his own field — feed manufacturing, marketing, etc."

This also means that no one firm would be so heavily involved financially as it would if it were trying to integrate a complete package.

Producers agree to meet certain management and egg handling recommendations and standards in return for assurance of the market, and an agreement to that effect is made with the Miller firm.

Don Geiser, manager of the Topeka company's feed department, feels that feed manufacturers will find it increasingly difficult to operate unless they know where a steady market for their feed will be. And a feed company will have to help in providing a market for the end products if it expects to sell feed.

Starting Place

In this connection, it was noted that the starting place in development of the Kansas program was the market. Mr. Miller called on markets in Kansas City to find areas from which they needed quality eggs. Topeka was one of the areas mentioned. Topeka Mill & Elevator was contacted, and initial development work began.

Here is how the Miller firm and Mr. Geiser outlined the development and operation of the "Farm-to-Market" program:

Meetings were held with key producers in the area as well as leading producers in the Topeka area. However, some of their remarks indicate trends as they see them.

Like others, Harry Reed, secretary of the Kansas Poultry Assn., Manhattan, has attended a number of meetings of producers held in connection with the organization of the new program.

Sees Good Future

"We have to encourage the development of more efficient producers, and that usually means larger producers. Kansas is coming to the front in egg quality, but we need more large producers to keep our egg business. Unless we have programs like this new one, Kansas can kiss the egg business goodbye. We may be out of the egg business unless large flocks grow rapidly. However, we think Kansas can grow in the egg business with organized quality egg programs. The salvation of the farmer is in this type of thing.

"We can produce eggs cheaper, with less labor income than in some areas. Most of our surplus eggs go to the Southwest now, but eggs can move to the East Coast for 3¢ doz. by truck, and more of our eggs will find their way East."

Jim Petr of the marketing division of the Kansas Board of Agriculture definitely sees more specialized

(Turn to KANSAS, page 180)

At a meeting of producers in the "Farm-to-Market" program, two of the key producers discuss various aspects of egg marketing with Jim Petr (right) of the marketing division of the Kansas Board of Agriculture. In the center is Norman Oberheiman, chairman of the producers' steering committee, and on the left is August Scheetz, chairman of the marketing sub-committee. The producer committee works with the feed firm and program coordinator in formulating plans and policies.

A key man in the new coordinated egg program is the serviceman. In this picture, Charles Heckerson (right), serviceman for Topeka Mill & Elevator, is discussing some of the basic points with producer Henry Laue.

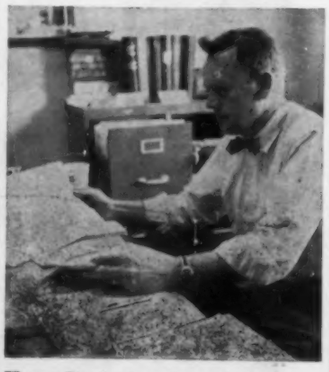
A Farm-to-Market Producers Manual sets forth management, feeding, housing, egg handling and other recommendations for producers in the Topeka egg program. Looking over the manual here are, left to right, Bill Lowe of Lowe's Hatchery in Topeka; Gilbert Jones, one of the producers, and Bill Parmely, director of poultry field operations for Mel Miller & Co.

• • •

Kansas Experts Note Industry Trends

As has been said so often, there'll be some changes made in the egg business. And with that a number of poultry industry leaders in Kansas agree.

They all noted that they could not endorse any particular industry-sponsored egg programs, nor could they comment on all of the details of the new "Farm-to-Market" program in the Topeka area.



Harry Reed, secretary of the Kansas Poultry Assn., looks over some egg promotion literature as he comments on poultry industry trends in Kansas.

Dave Hund (left), one of the Kansas egg producers in the Topeka program, is showing Bill Parmely of Mel Miller & Co. where he will build his second laying house, expanding his total flock from 1,400 to 2,800 birds. In the background is his first house.

hatcherymen. It was recognized that a large, steady volume of eggs would be needed to interest the egg buyer. The area covered was to be limited to a radius of 50-75 miles from Topeka in order to assure efficiency and faster, better service in making and distributing the feed and in collecting and transporting eggs to the market.

The program, say Mr. Miller and Mr. Geiser, is built around the egg producer, and producers in the program have elected a steering committee and officers. Bill Parmely, director of egg production field operations for the Miller firm, is executive secretary of the committee. The producer group helps determine certain policies and plans, decides on the market in consultation with the Miller company and helps assure compliance with management and other requirements.

Attending meetings with producers have been such persons as hatcherymen, county agents, college poultry authorities and representatives of the state department of agriculture and Kansas Poultry Assn. Thus, a considerable amount of outside advice has been obtained on the economic and production aspects of the program.

It is recognized that there must be a concentration of egg production within an area to make a program succeed. If desired, the Miller firm will own and put out birds to producers on a lease basis, paying them on a per dozen basis for their labor and facilities. Then, as the program developed, the farmers would be privileged to purchase the birds and get into the plan on a regular basis. So far, however, in the Topeka program, all producers own their birds.

The feed company is prepared to do some financing, but to date banks have gone along on any required financing of new or expanded facilities because the program is supervised and a market is assured.

No Guaranteed Price

There is no guaranteed egg price. The producer is assured a market, and the egg buyer assures payment of the top going price. Recently, for example, the price for grade A large eggs for producers in the Farm-to-Market program was 1¢ over anything in the market area. And the price was running 4 to 5¢ doz. over the local market for graded eggs.

A partial view of the laying house and the bulk feed tank at the farm of Norman Oberhelman, chairman of the producers' steering committee in the Kansas program. Servicemen work with producers in setting up and operating laying houses on an economical, efficient basis, Topeka Mill & Elevator officials point out.

Bulk feed for producers in the "Farm-to-Market" egg program is being loaded into a truck of the Topeka Mill & Elevator. The company now has Sprout-Waldron pneumatic unloading units on 7-ton and 11-ton bulk-sack trucks, and another 11-ton truck is to be purchased.

The eggs are picked up at the farm by a truck provided by Topeka Mill & Elevator and transported to Kansas City. Payment for the eggs goes through a bank, acting as a trustee, and to the producer. The egg company makes regular reports to the

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Miller company and the producers on egg quality.

In addition to meeting management and other recommendations in the Farm-to-Market Producers Manual, the producer must provide egg cooling facilities. Ninety per cent of his eggs must stay above grade A. In general, it was reported, the producers have been exceeding 95%. The Miller field supervisors follow the eggs in marketing to check quality.

A new producer getting into the program must have at least 1,000 birds or be prepared to move up soon to the minimum. A large share of the farmers now in the Topeka program already were producing eggs on a commercial basis. According to Norman Oberhelman, president of the producers' committee, producers in this program represent 40% of the poultry population in Topeka Mill & Elevator's home county. This group, he said, includes virtually all of the commercial producers in the area.

Replacement Birds

Farmers are encouraged to grow their own replacements, but if a producer wants started pullets, these will be provided by the Miller firm through arrangements with growers specializing in this phase of the poultry business. By pooling orders and good scheduling of growing operations, it is expected that birds ready for the laying house can be delivered for well under going retail prices.

No one hatcheryman and no one strain of birds are specified. However, it is suggested that the chickens be among the top five in random sample tests. It must be a light bird, producing white eggs.

In development markets, the Miller firm finds potential markets and then consults with the producers' marketing sub-committee to determine the markets with which agreements will be made.

Other sub-committees of producers deal with such things as membership, publicity, credit (to screen persons who may want financing), etc.

Feed Formulation

The feed for the program is formulated by the technical people in the Miller organization, directed by Loren Burns, vice president. Formulation is geared to egg market requirements and to management levels of different producers. If a producer's facilities and management do not immediately warrant a high energy feed, he will get a lower calorie feed until he can be built up into the top production bracket and effectively use the higher feed efficiency potential.

High energy feeds are being used, and Charles Heckerson, Topeka Mill & Elevator serviceman, says producers are getting a dozen eggs now on 3½ to 4 lb. of feed. The Farm-to-Market ration is a complete feed, in crumblized form, and has 16% protein.

As part of the rigid feed quality program, samples are taken at the farms as well as at the feed plant and analyzed.

The feed is delivered directly from the mill to the farm, and virtually all of it is in bulk.

Feed Efficiency-Conscious

The producer is required to maintain a monthly record covering such things as egg production, bird depletion, feed use and feed efficiency. This has made the farmers especially feed-efficiency conscious, and they use such exact figures as 3.58 or 3.72 in speaking of efficiency. Help and supervision from qualified servicemen in the program are of extreme importance in achieving these efficiencies as well as the specification egg quality, it was pointed out.

For producers who want or need them, plans and specifications for housing, ventilation and equipment are provided. The Topeka Mill and Miller service personnel work with farmers on an individual basis in setting up facilities to meet their needs. Frequently existing buildings are converted.

Both cage and floor operations are used in the program.

Among key persons in the program are:

Topeka Mill & Elevator—Don Geiser, feed department manager, who advanced to his present position from salesman and sales manager; and Charles Heckerson, serviceman, who has been in the poultry business during his entire career.

Mel Miller & Co. — Mel Miller, president, formerly in management positions with Nutrena Mills, Inc., and Consumers Cooperative Assn.; Loren Burns, vice president in charge of technical services, formerly with MFA Milling Co., Kansas State College and Agri-Tech; Bill Parmely, director of poultry field operations, working with producers and feed company, operator of a 5,000-layer farm and formerly with Combs Hatchery; Bill Lohmeyer, in quality control work; Larry Maple, in charge of field equipment, and Wil-

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liam H. Kamp, feed production, formerly with Ralston Purina Co.

Mr. Geiser says that, so far as he knows, the new program is the first of its type, and he says he is "100% sold on it."

"It is keyed to the producer; in fact, the producer maintains some control of the program," he said. "We are trying to serve the producer so that he can survive and maintain his independence in the current situation.

Steady Feed Volume

"For us, it means a steady lower cost, larger feed volume. Also, since we had been pretty heavy on one type of feed (cattle), it helps balance out our line and give us a more stable business in spite of the ups and downs of the poultry and livestock markets, which have shown up clearly in our profit margin graphs in the past."

Mr. Geiser noted, too, that his firm is planning to get into a swine program, using a grain bank set-up.

He pointed out that his costs, and feed prices, in the egg program are lower because of no sales or advertising costs, larger volume and direct delivery in bulk to the farm. The feeds are formulated and priced separately from otner feeds in the firm's line.

All of the feed goes directly from the mill to the farm, with no dealers or salesmen involved. Later, the firm expects to have some satellite mills through arrangements with key dealers.

Mr. Geiser said his company's tonnage the last four months has been the highest on record each month, with further growth expected.

Emphasis on Service

"The day of the old type feed salesman is gone," he continued, emphasizing that the biggest change for his company has been in organization. "Now we use specialists, farm service representatives, instead of salesmen as such."

He also pointed out that while feed tonnage has traditionally been the basis for compensating feed people in the field, efficiency for the producer is the basis of incentive pay for the serviceman under the Farm-to-Market program. The serviceman is given a good base pay, described as "better than normal," and then "he makes more by selling the individual feeder less."

Said Mr. Geiser: "If the feed company wants to maintain good relations with the feeder, to hold his business, to get more farmers into the program, least cost per dozen and margin over feed cost are the thing. It's a big challenge, and it takes a mighty good serviceman to carry it out."

Feed pricing under the program also is different. If the differential between costs per dozen and egg prices changes a certain amount, the feed margin will vary a certain amount determined by a differential index. "If there is a squeeze on the producer," said Mr. Geiser, "the feed company will share in the squeeze. If egg margins are good, both share in them."

The feed man can expect a greater net return over the longer term if he can maintain a steady, reasonable-margin business, it was noted. For a feed man to compete with a completely integrated operation, he has to adjust his margins. The integrator has to lower his margins when egg prices are down; the feed man does the same thing here. However, in all of this, good management and efficiency are important.

Another special feature of this program is the insurance, carried with a business insurance firm and paid for by Miller. The producer is insured against losses if the egg buyer, for some reason, is unable to make payment on the eggs. The insurance company under such a set-up watches the financial condition of the egg company, and non-payment is very unlikely, Mr. Miller said. The plan is similar to credit insurance carried by grocery or department stores.

Cost Control

Mr. Parmely says that the important factor in the entire program is, in addition to getting the best possible egg price, close work on control of costs. This, he said, comes through service and supervision; lower feed costs through formulation and feed manufacturer efficiency; low capital investment; and lower pullet replacement costs (through such things as restricted feeding, combined marketing of salvage birds to get better prices and other steps). Every producer in the program, he said, has improved his efficiency and increased his net margins.

Mr. Parmely says the average commercial producer may aim for a cost picture like this: 15-16¢ doz. for feed; 10¢ doz. for replacement birds; 3¢ for building and equipment depreciation and maintenance; 4¢ for labor; 2¢ as interest on the investment—a total of 34 or 35¢. However, a good producer under the right conditions, he said, can get feed cost down to 12 or 13¢ doz.; replacement costs may be no more than 7¢ doz. with efficiency and effective marketing of salvage birds. Trimming other costs, too, the total should go down to 25¢.

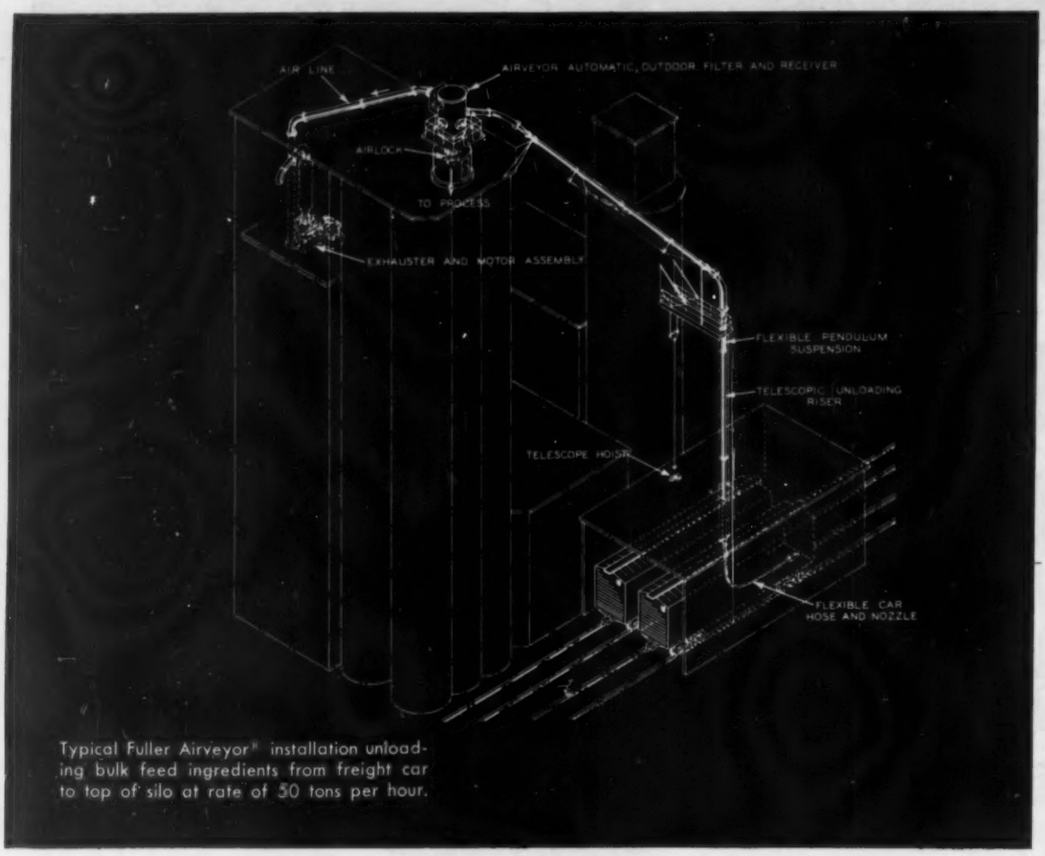
"It is levels like these that we are aiming for with our producers," he commented. "and many of them are doing it. Even with the recent low egg prices, our producers are making a profit."

Producer Comments

Several of the producers in the Topeka program had some comments on how the plan has affected them.

Norman Oberhelman, chairman of the steering committee, said the feed price and service are among the most important things for him. Illustrating the farmer consciousness of efficiency in the program, he said when asked about feed prices: "It's not just the feed price; it's the conversion that determines feed costs. I had a conversion of 3.9 the first 30 days and am improving on this."

Gilbert Jones said he was getting 4¢ more per dozen than when he was going to the trouble of retailing eggs. Also, he reported a feed conversion of 3.5, a production rate of 93% with 6½-month-old birds, and a feed price of $8 per ton less than



Typical Fuller Airveyor® installation unloading bulk feed ingredients from freight car to top of silo at rate of 50 tons per hour.

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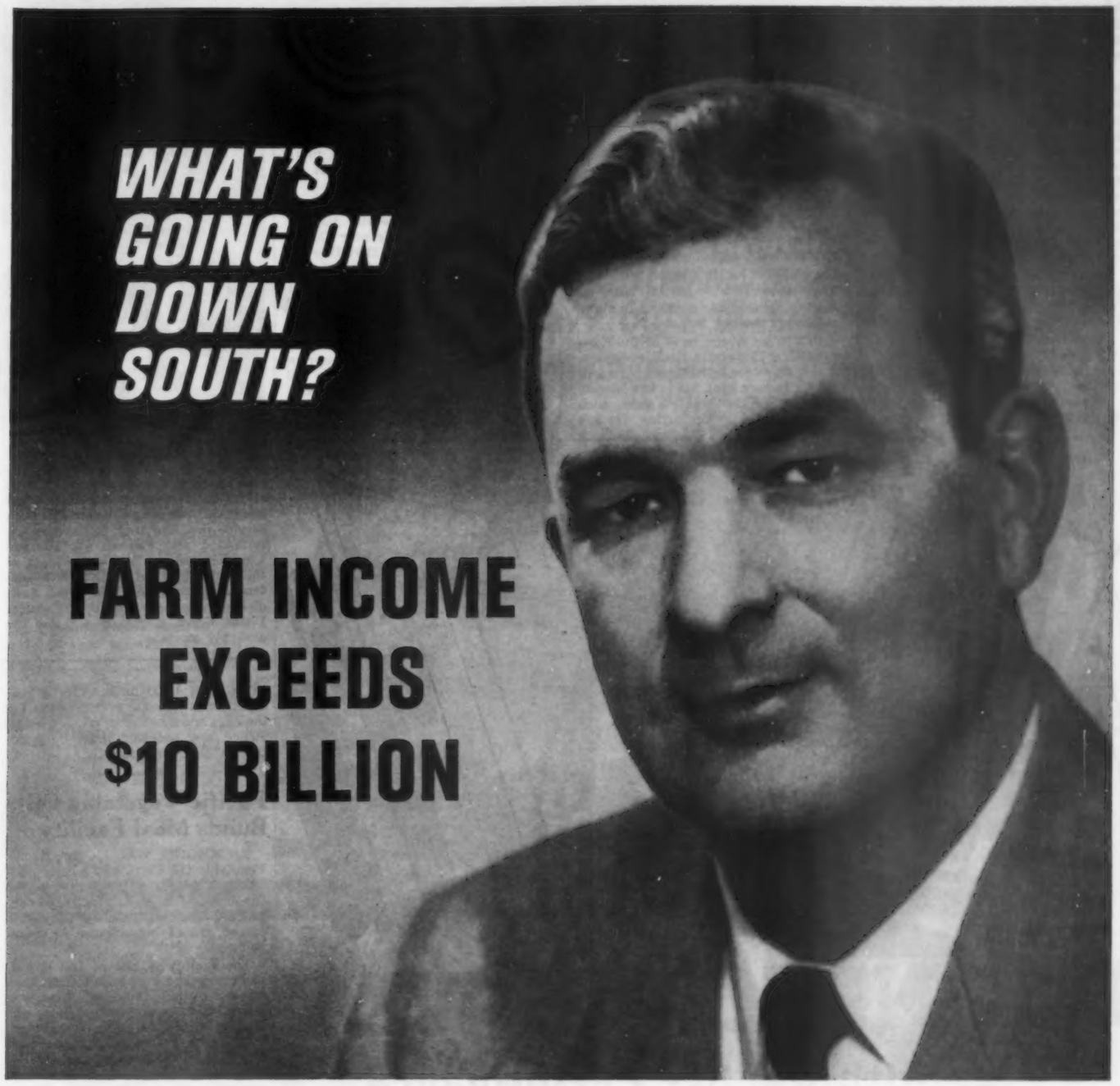

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formerly. Improving existing facilities, including the conversion of an old barn to a laying house, he had expanded from 400 to 1,000 layers.

August Scheetz, chairman of the marketing sub-committee, formerly sold eggs locally. By concentrating his efforts on production and not delivering eggs, he indicated that he had boosted his profits. He also pointed to bargaining power through the joint efforts and the availability of markets. "You can't just go in and sell eggs to quantity, quality buyers any more. The independent producer marketing alone just doesn't have a good outlet."

Henry Laue formerly had an outlet at a price 2¢ above the going Topeka market. Now, he said, he is getting 5¢ over the local market.

Dave Hund, after really starting to watch his feed efficiency, reported a conversion of 3.58 lb. of feed per dozen, compared to about 5 on a previous mash-and-grain program. He is now building an additional house, increasing his flock from 1,400 to 2,800 birds, and using no more labor by installing new nests and a feeding unit serving both houses.

KANSAS

(Continued from page 174)

marketing programs, with more specialized production going into special outlets.

"Farm flocks are disappearing faster than many of us realize," he said. "Supervised, organized plans from the producer to the market will help. They show how a person with an economical unit can continue to make money in the egg business."

Prof. Tom Avery, head of the Kansas State University poultry department, says coordinated programs will help a farmer keep his independence. "They give the smaller man such advantages as group buying. He has the advantages of integration without integration."

Bill Lowe of Lowe's Hatchery in Topeka, who helped set up the first producer meeting for the new Farm-to-Market program, commented on the changing scene in his business.

"Chick days are dropping out fast," he said. "Feed men now are applying their money and energy to more worthwhile activities, not just to promotions."

Must be Selective

Charles Heckerson, service man for the Topeka Mill & Elevator Co. in its egg program, noted that there is a lot of interest in this type of program. In fact, he said, the better price obtained through the program carried all egg prices in the area up significantly.

He emphasized, though, that there could be real problems if a program sponsor went out and took in all 300 to 500 bird flocks of farmers who happened to be interested. To be economical, he said a unit should get up to at least 1,000 birds. Also, a producer must provide refrigeration for the eggs and meet other requirements. Hence, any program must be selective in order to succeed.

Fred C. Davis

APPOINTMENT — The Flynn Steel Buildings Co., Great Falls, Mont., has announced the appointment of Fred C. Davis as manager. Mr. Davis will head the company's expanded farm service program that emphasizes coordinated and planned storage and handling systems. He is president of the Montana Feed Dealers & Manufacturers Assn. and was Great Falls division manager of the Farmers Union Grain & Supply Co. for the past 2½ years.

Pacific Vegetable Oil Builds Meal Facility

RICHMOND, CAL. — The Pacific Vegetable Oil Corp. has completed a $300,000 meal handling facility which enables the firm to extend its services to feed mills by offering fully processed meal ingredients, it is announced.

The facility is one of the largest plant additions ever built for the firm, founded in 1921, and represents a long step toward plant automation, the announcement said. Major installations in the factory addition are three 300-ton vertical storage bins, a series of automatic conveyors, several processing bins, and working bins to serve them, plus other equipment.

The company formerly was unable to finish off the seed meal residue after extracting the oil from such products as soybeans, safflower, copra, and flax. Until now, these products were sacked at a slow rate or ground before sacking.

George Kopas, engineer who supervised construction, said the firm also can now add molasses and fat as well as offer pelleted meal. Greater efficiency permits grinding at the rate of 25 tons an hour, an increase from five tons an hour; sacking at the rate of 30 tons an hour, an increase from about five tons, and pelleting at 10 tons an hour, he said.

Joins College Faculty

AMHERST, MASS. — Lester F. Whitney, assistant chief engineer and assistant plant manager of the Brattleboro, Vt., plant of Wirthmore Feeds, Inc., for the past five years, has joined the department of agricultural engineering in the College of Agriculture, University of Massachusetts, Amherst. His appointment as an assistant professor was approved recently by the board of trustees. Mr. Whitney graduated from the University of Maine in 1949 with a bachelor's degree in agricultural engineering, and he received his master's degree in 1951 from Michigan State University.

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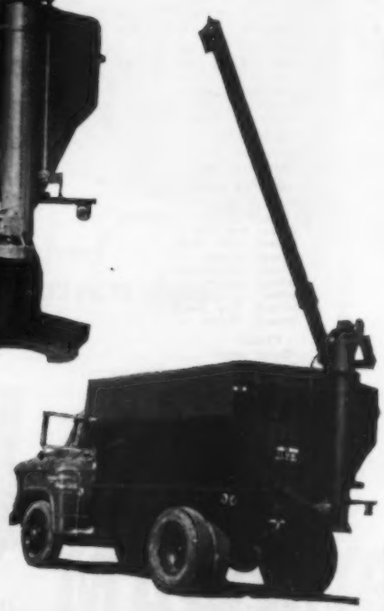

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FLOW CHARACTERISTICS OF FEED INGREDIENTS

By Paul Berg
Professional Engineer

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A feed mill operates on the basis of a continual flow of raw ingredients into the mill and finished mixed feed out of the mill. Therefore, the most important aspect of the operation is trouble-free flow.

Prior to 1940, very few feed mills stored ingredients in bulk, and what was handled in bulk was the less troublesome grains, either ground or unground. The mixing of feeds out of sacks then presented few flow problems.

During the past 10 years there has been a rapid trend to bulk handling to improve efficiency, first in raw ingredients and lately in finished feed. As is often the case new methods cause new problems, and some of the problems caused by bulk handling have been frustrating. Some ingredients will flush out of a bin or through a spout; others will pack, arch or channel and require considerable prodding.

The trend to bulk handling has caused another problem, and that is the determination of the quantities on hand, for taking physical inventory of feed in bins is considerably more complicated than counting the number of sacks in the warehouse.

Study Under Way

In recognition of these problems a study has been under way for several years by the author to obtain information on the flow and storing characteristics of all types of ingredients used in the feed industry. This study is obviously time consuming because ingredients vary considerably over the entire country and from one industry to another. For the information to be representative it must be thorough. At this time considerable published information on apparent or bulk density is available. As more data is accumulated additional information will be released, and ultimately there will be available for the feed industry's use a very comprehensive reference.

A very urgent need for accurate data has existed for some time. Information published has not been complete. The references do not agree with each other; some of the information is obviously wrong; the method of determining data has never been specified, so there has been no standard procedure to follow. Some existing information is confusing because the terminology varies or is incomplete, leaving doubt as to the true meaning.

To correct some of these conditions the author has done several things.

Ingredients are being identified where possible according to terminology of the Association of American Feed Control Officials. Items not listed by this group are identified according to common usage. An attempt is made to give a complete description of each ingredient so as to leave no doubt of the meaning. A method is established for obtaining the information to introduce a standard procedure, and this method has been checked with different groups to obtain their criticism. This test procedure is described later in this article.

Part 1—Ingredient Characteristics

There are a number of factors that influence the storage of ingredients and the flow characteristics and each must be discussed separately:

(1) Shape of the particles.
(2) Composition of the ingredient.
(3) Distribution of particle sizes.
(4) Specific density of the particles.
(5) Amount of foreign material.
(6) Moisture content.
(7) Oil content.

SHAPE OF THE PARTICLES: There are a number of different shapes of particles represented in feed ingredients. Some are flat, such as bran, corn flakes and rolled grains. Some are stringy, such as beet or citrus pulp, malt sprouts and hay. Some are granular with particle sizes uniform, such as whole grains and pellets. Some are granular with particle sizes not uniform, such as by-product meals and ground grains.

Paul Berg

AUTHOR — Paul Berg, Ft. Wayne, Ind., the author of this article, is a professional engineer specializing in feed mill and grain storage design. Mr. Berg contributed the engineering for the pilot feed mill at Kansas State University and has designed feed and grain projects at various locations in the U.S. and foreign countries.

The shape of the particle may be altered and exist in several different forms. Oats are available as: Whole oats, oat groats, ground oats, rolled or crimped oats. Alfalfa is available as: Hay, meal, pellets and crumbles. Protein meals are available as: Cake, meal and pellets.

The shape of the particle will not predict the flow or storage characteristic, but most often an explanation can be found for these characteristics. For instance, beet pulp appears to be a poor flowing type, but the fibrous nature of this ingredient apparently resists settling and packing, which is the primary reason for ingredients not flowing. Bran, on the other hand, is light and flaky and would be expected to resist packing, but due to its composition will set up very easily and cause a great deal of flow problems.

The flow of the ingredient in a spout can not be directly correlated with the shape of the product. Spout flow is a function of friction between the particle and the spout surface, and the particle composition contributes most to the friction characteristic.

The flow characteristic can be altered by changing the shape. Mash feeds or ingredients do not flow as easily as in the pellet or crumble form. Grains cause no trouble as whole grains but as ground grains can cause considerable trouble, and oats is a good example of this phenomenon.

The shape of the particle does have some relation to the apparent density. For instance, fibrous ingredients have considerable voids and therefore are light in apparent density. Flaky ingredients are also high in voids and have a light apparent density. Granular ingredients with a distribution of sizes to fill the voids have a high apparent density. The average apparent density appears to be near 33 lb. per cubic foot.

COMPOSITION OF THE INGREDIENT: The composition of the ingredient may be hard, soft, springy or brittle. Hard types are: Minerals, pellets, grain particles (such as corn) and some meals. Soft types are: Bran, grain particles (such as oat groats), and some meals. Springy types are: Grain hulls, hay, beet or citrus pulp. Brittle types are: Corn flakes and wheat flakes. Some ingredients change in composition with age. Some ingredients, such as screenings, represent several types.

The flow of the ingredient in the bin or spout is greatly affected by the composition, but since this is inher-

Apparent Densities of Dry Feed Ingredients

(Pounds per Cubic Foot)

*Items listed by the Association of American Feed Control Officials

Description	Weight/ cu. ft.
ALFALFA PRODUCTS:	
*Alfalfa meal, dehydrated, 13%	16-18
*Alfalfa meal, dehydrated, 17%	18-22
*Alfalfa meal, suncured, 13%	14.0
*Alfalfa leaf meal	14.5
*Alfalfa steam meal	12.0
Alfalfa pellets, 13%	41-43
Alfalfa pellets, 17%	41-43
Alfalfa crumbles	33.5-41
Alfalfa meal, fine ground	15-22
Alfalfa seed	48
ANIMAL PRODUCTS:	
*Blood meal	38.5
*Blood flour	30.0
*Meat meal	37.0
*Tankage (digester)	49¼
*Poultry by-prod. meal	34-37
Bone meal	50-53
BARLEY PRODUCTS:	
*Rolled barley	21-24
Barley (scoured)	41
Barley, whole	38-43
Barley, ground	24-26
Barley, malt	30-31
BREWERS PRODUCTS:	
*Brewers dried grains	14-15
*Malt sprouts	13-16
CITRUS PRODUCTS:	
*Dried citrus pulp	20.5
CORN PRODUCTS:	
*Corn meal	38-40
*Corn bran	13
*Corn feed meal	33.5
*Corn chops (fine)	36-39
*Corn chops (medium)	38-42
*Corn chops (coarse)	40-44
*Corn grits (fine)	40-43
*Ear corn chops	35
*Corn gluten feed	26-33
*Corn gluten meal	32-43
*Hominy feed	25-28
*Corn oil meal	33-36
*Corn germ meal	35
Corn, ground	34-36b
Kibbled corn	20-22
Ear corn	56 (28)
Ground cobs	17
Pop corn, ear	56 (28)
Pop corn, shelled	44-45
COTTONSEED PRODUCTS:	
*Cottonseed oil meal	37-40
*Cottonseed cake	40-45
Cottonseed meats	40
Cottonseed cake, cracked	41
Cottonsed hulls	12
Cottonseed w/lint	18-25
Cottonseed, delinted	22-27
DISTILLERS PRODUCTS:	
*Corn distillers dried grains	18-19
*Corn distillers dried solubles	25-26
GRAIN SORGHUMS:	
Kafir	40-46
Sorghum seed	32-33
Kafir and milo	40-45
Milo, ground	32-36
LINSEED AND FLAX PRODUCTS:	
*Linseed oil cake	45-50
*Linseed oil meal (sol. ext.)	31-33
*Flaxseed screenings	26-28
*Linseed feed	20-21
Flaxseed	43-45
MARINE PRODUCTS:	
*Fish meal	30-34
*Shrimp meal	25
MILK PRODUCTS:	
*Dried whole whey	35-46
*Condensed buttermilk	31
MINERAL FEED:	
*Salt	62-70
*Calcium carbonate	75
*Defluorinated phosphate	97
Potassium iodide	22
Bentonite	51
Limestone	68
Phosphate	75
Sulphur	13
Cobalt sulphate	48
Copper sulphate	62
Ferrous carbonate	85-90
Phosphate, tricalcium	21
Zinc sulphate	85-88
Sodium bentonite	41
OAT PRODUCTS:	
*Oat hulls, unground	8-9
*Oat hulls, ground	11-12
*Oat middlings	38
*Oat chops	30
*Ground oats	20-25
*Pulverized oats	19-21
*Crushed oats	22
*Crimped oats	19-25
*Oat groats	46-47
*Feed oatmeal	16-32
Oats, whole	25-35
Oats, rolled	19-24
PEANUT PRODUCTS:	
Peanuts, unshelled	17-24
Peanuts, shelled	15-19
RICE PRODUCTS:	
*Rice bran	20-21
Polished rice	30
Rice hulls	20-21
Rice, hulled	45-49
Rice, grits	42-45
Rice, rough	32-36
RYE PRODUCTS:	
*Rye bran	15-20
*Rye feed	33
*Rye middlings	42
Rye shorts	32-33
Rye, whole	43-45
SCREENINGS:	
*Grain screenings	30
*Chaff and dust	20
*Dust	11
SOYBEAN PRODUCTS:	
*Ground soybeans	25-34
*Soybean millfeed	25-27
*Soybean hulls, unground	6-7
*Soybean hulls, ground	20
*Expeller soybean oil meal	36-40
*Sol. ext. soybean oil meal, 41%	34-36
*Sol. ext. soybean oil meal, 44%	35-38
*Sol. ext. soybean oil meal, 50%	41-42
Soybeans, whole	46-48
Soybean millfeed pellets	37-38
VITAMINS:	
Riboflavin	37
Vitamin A, dry	48
WHEAT PRODUCTS:	
*Wheat bran	11-16
*Wheat standard middlings	18-25
Wheat red dog	22-28
Wheat germ meal	28-32
Wheat, whole	45-52
Wheat screenings	17-25
Wheat, ground	38-39
Wheat, coarse cracked	35-38
Wheat, fine cracked	38-41
Wheat, flakes	31-33
YEAST:	
*Dried yeast	41
MISCELLANEOUS PRODUCTS:	
*Buckwheat middlings	22
*Dried beet pulp	11-16
*Copra oil meal	27
*Copra oil cake	23
Buckwheat bran	15-16
Buckwheat hulls	12-13
Buckwheat, whole	37-42
Beets	48
Broom corn seed	41-42
Malt, wet	60-65
Malt meal	36-40
Malt, dry	27-32
Brewers grains, wet	55-60
Clover seed	48
Corn and oats chops	17-18
Feeds:	
Dairy, light	18-22
Dairy, heavy	20-28
Dairy, concentrates	43
Hay, loose	5
Hay, pressed	8
Millet	38-40
Molasses feed	20-25
Pellets:	
⅛" hog pellets	39
⅜" rabbit pellets	37
Peas, dried	48-50
Sugar	54-56
Sea Coll	65
Stilbestrol	40
Sunflower seed	26-38
Timothy seed	36
Urea	34-42

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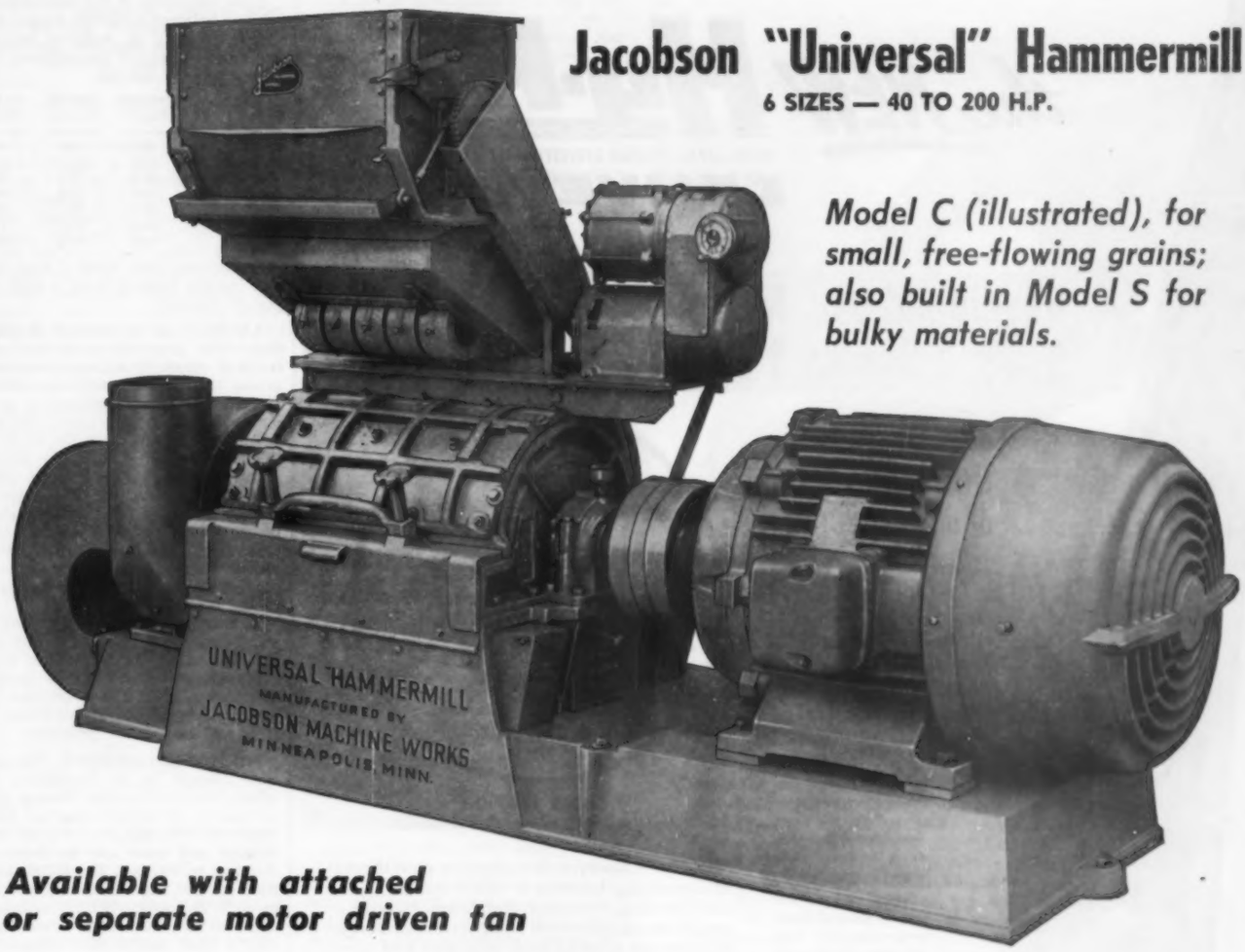

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ent with the ingredient, it is difficult to correct flow from this characteristic. It is possible that processing of some of the meals could result in a different composition that would have improved flow characteristics.

DISTRIBUTION OF PARTICLE SIZES: Ground grains are examples of particle size distribution. Many of the processed meals also are examples of this characteristic.

Many of the flow problems can be attributed to the distribution of fines. If the particles tend to be of one size, there will be a maximum of voids. On the other hand, if there is considerable variation in particle size, there will be a minimum of voids. Since the friction between particles is directly proportional to the amount of surfaces that are in contact, the fewer the voids the greater the problem of flow. Therefore, a uniformity of grind is always favorable to better flow.

Another problem of particle size distribution with relation to flow exists in pellets and crumbles. In these types of materials, the fines percolate through the voids to the bottom of the bin and segregate, resulting in surges of fines discharging from the bin. Steep hoppers will aid in correcting this problem.

Another problem of particle size distribution is the tendency of large particles to work to the outside of the bin. This can be solved by distributing the flow into the bin properly.

The flow through spouting is sometimes affected by fine particles clinging to the spout surface. This can be corrected by keeping the spout angle at 45° or greater.

The apparent density of a product will increase if the distribution of fines results in a reduction of voids.

SPECIFIC DENSITY OF THE PARTICLES: The specific density is the weight of the product without any voids. If a product having 40 lb. per cubic foot apparent density is known to have 50% voids, then the specific density would be 80 lb. per cubic foot.

Some examples of the approximate relation between apparent density and specific density as supplied by the American Society of Agricultural Engineers are as follows:

Grains	Apparent Density	Specific Density	Per cent Voids
Barley	38.4	75.0	45
Corn	44.8	74.0	40
Grain Sorghums	45.0	77.0	37
Oats	25.6	62.0	51
Rice	36.0	70.0	48
Rye	44.8	77.0	41
Wheat	48.0	81.0	40

Ingredients that have a high specific density usually have a high apparent density.

AMOUNT OF FOREIGN MATERIAL: The presence of foreign material is generally more a problem in grains than in processed ingredients. If foreign materials existed in products before being processed, the processing procedure usually obscures this presence. In grains, the foreign material, such as weed seeds, chaff, dust, sand, straw, husks or cobs, is usually removed by a grain cleaner prior to storage and grinding. In some cases the feed miller does not have a grain cleaner and relies upon the purchasing department to get clean grain.

If foreign material does exist in small quantities, it will not influence the flow in spouts or in bins. There is some influence on the keeping qualities of grain if it is unclean, and grain that goes out of condition will cake and cause flow problems.

MOISTURE CONTENT: The moisture content in an ingredient will affect both the flow and storage characteristics. A higher moisture ingredient will cake and pack in a bin more readily, and there may be deterioration due to heating. The higher moisture content ingredient will not flow as well in spouts, but tests indicate the moisture must be so much higher (10%) than normal that this should not be considered a problem.

Bran is a good example of the effect

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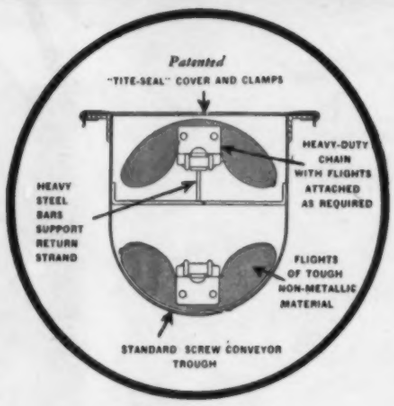
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Note Neat, Compact Construction

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A standard head section is made of heavy gauge steel and fitted with shaft, bearing and sprocket.

A standard tail section comprises a tail shaft, sprocket and take-ups.

Intermediate sections consist of screw conveyor trough (usually carried in stock) fitted together in the regular manner to any desired length.

The complete "Hy-Flo" unit is enclosed with our "Tite-Seal" cover design providing dust-tight construction.

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PENB PRESIDENTS—L. N. Thompson, retiring president of the Poultry & Egg National Board, receives an expression of appreciation for his year of service from Ralph J. Thomas, newly-elected PENB president. Mr. Thomas, manager of the associate hatchery division of the DeKalb Agricultural Assn., Sycamore, Ill., is shown making the presentation at the recent PENB annual meeting in Chicago. Mr. Thompson, general manager, Poultry Producers of Central California, will also receive a plaque from PENB in recognition of his service.

the moisture content has on the flow characteristics in bins and a reduction of 1 or 2% in moisture content can improve the flow considerably. Some feed millers have found that turning the bran in the bin will improve the flow characteristics.

Some ingredients are hygroscopic and draw moisture, thus causing flow problems. Whey and urea are examples of this type ingredient and should be protected from moisture as much as possible to keep them in flowing condition.

OIL CONTENT: The amount of oil in an ingredient has a similar influence on the flow and storing characteristics as does moisture. Some ingredients such as fish meal will bleed oil, although this problem has been reduced considerably due to improvements in the processing.

Part 2—Test Procedures

There are several measurements that may be made of feed ingredients that are useful to determine the flow and storage characteristics:

(1) Apparent density.
(2) Pack.
(3) Bin flow characteristics.
(4) Angle of repose.
(5) Angle of flow.

Each will be discussed separately and methods of determination explained.

APPARENT DENSITY: The apparent density is determined by pouring the ingredient loosely into a 1 cu. ft. container (measuring 1 ft. on each side). In order that the ingredient is not packed due to falling, it is necessary that the ingredient be poured as near as possible to the top of the container. Another precaution is to be sure the test ingredient does not contain lumps or foreign material. Place a 1-in. mesh screen over the top of the box to reduce the contamination as much as possible. After filling the box to over-flowing the ingredient is struck off level full and the weight of the ingredient determined.

A table of apparent densities of different ingredients used in the feed industry accompanies this article. Where two weights are shown this indicates tests have proven a variation exists. Where one weight is shown this indicates insufficient samples were tested to determine a variation. In some cases weights of wide variation have been detected, but these have been omitted until complete accuracy can be determined.

Apparent density is necessary to determine bin capacity. This quantity is used in the design of bins and to determine the inventory in bins. This quantity is also necessary to determine the capacity of volumetric material handling equipment.

PACK: The amount of settling or packing is determined as a second step after determining the apparent density. After the apparent density has been determined, the box is set down firmly four to six times to settle the ingredient in the box. The number of times necessary will vary with different ingredients, but the settling should continue until no further reduction is noted. The amount the material has settled is determined by measuring from the top of the box, and this amount is converted into a percentage. For instance, if the settling amounts to 2 in., the amount of packing will be ten-twelfths or 83.3%.

The actual amount of pack or settling in the bin will be proportional to this test, but in the bin the weight of the ingredient will increase the settling more than is evident by a test. It is possible in a deep bin for the weight per square foot at the bottom of the bin to be over 1,000 lb. and this will add greatly to the settling.

BIN FLOW CHARACTERISTICS: This is not determined by a test procedure but by actual observation. A suggested means of describing the flow problems or amount of times the bin will not flow is the use of such terms as always, often, occasionally, seldom or never.

ANGLE OF REPOSE: The angle of repose is used in bin calculations. For instance grain bins of wide area will be filled to near the roof line, and it is essential that the slope of the roof take into account the angle of repose of the grain.

This angle is found by piling from a fixed location with a small spout and from a short height so that the pile is not disturbed by gravity. The angle of repose is the angle the pile side makes with the horizontal.

Some relation exists between the angle of repose and the angle of flow in a spout. The angle of repose is affected by the friction between the particles, and the angle of flow is affected by the friction between the particle and the spout surface.

ANGLE OF FLOW: The angle of flow is determined by placing a test surface horizontal and then placing some of the ingredients upon the surface. The surface is tilted slowly until the angle is reached when the ingredient will flow or slide off the surface.

The test surface should be smooth and of the material that is used in the feed mill for spouting, such as wood or steel.

The proper spout angle can be determined by using information obtained with this test.

New Hot Spot Detector Representatives Named

DES MOINES — The appointment of George Uhlman, Kansas City, Mo., and Bill Jones, Little Rock, Ark., as sales engineers for Hot Spot Detector temperature systems and engineered aeration systems has been announced by R. L. Wilson, sales manager.

Mr. Uhlman will represent Hot Spot in Missouri. Until recently he was associated with the Walker Marketing Corp. as territory manager.

Mr. Jones will be active in Arkansas, Tennessee, Louisiana and Mississippi. A graduate of the University of Arkansas with a major in engineering, he was area supervisor for the Niagara Chemical Co., Arsenal, Ark., before joining the Hot Spot organization.

FEED STORE BURNS

VALE, ORE.—A midnight fire recently destroyed the Vale Feed & Grain Store, including a large stock of feed and supplies. Damages were estimated at $75,000 to $100,000. Cause of the fire is not known. Hilton Clark, co-owner and manager, said plans are under way for rebuilding. Temporary headquarters have been set up in a warehouse and arrangements for grinding and mixing grains are being completed.

CHICKENS IN A BUBBLE AT RUTGERS

NEW BRUNSWICK, N. J.—Chickens in a bubble? The idea sounded strange to researchers at Rutgers University's Agricultural Experiment Station until they tested a plastic bubble chicken house.

The pilot bubble house was built under the supervision of Dr. Robert L. Squibb, chairman, poultry science department, and Charles H. Reed, agricultural engineer, from $30 worth of polyethylene plastic film in a 20 by 30-ft. sheet, a used motor-blower and some odds and ends.

The result is a 10 by 20-ft. shelter that looks like the skin from a quarter of a giant sausage. No inside supports are needed, as the blower keeps the transparent film puffed out.

Mr. Reed built the bubble so Dr. Squibb could make further tests in his special study of heat stress in chickens.

But the bubble has proved so satisfactory that the two researchers can see other uses for such shelters: An isolation laboratory cheap enough to be burned after housing poultry known to be infected with disease, a controlled environment chamber, a chick brooder, temporary or emergency housing to enable a poultryman to expand or retrench according to market conditions.

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Capable of producing mashes, pellets, crumbles, dairy and molasses feeds, and located to serve the southern part of Wisconsin and northern Illinois. Write

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Address Box No. 4797, Feedstuffs
551 Fifth Ave., New York 17, N. Y.

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ALL KINDS OF GOOD USED GRAIN processing machinery. E. H. Beer & Co., Inc., Baltimore 24, Md.

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WANTED—STEAM FLAKING ROLL. Submit specifications, condition and price. Address Ad No. 4823, Feedstuffs, Minneapolis 40, Minn.

WANTED—125 H.P., 1,800 R.P.M. MOTOR, 220/440 volt, 3-phase, open, used; 125 H.P. reduced voltage starter switch, 220-volt or 440-volt, 60-cycle, 3-phase, used. Kaszik Companies, Milligan, Neb.

WANTED TO BUY — RICHARDSON scales, bag closing machines and other good mill, feed and elevator equipment. J. E. Hagan Mill Machinery, Jefferson City, Mo.

MISCELLANEOUS

WANTED TO BUY—150 FEET OF 12-IN. 2 or 3 ply used rubber belting. Brown & Co., Faunsdale, Ala.

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Explains Canadian Feed Tax Exemptions

TORONTO—In a recent bulletin from the Canadian Feed Manufacturers National Council, Toronto, W. N. Hendrick, general secretary, explained the application to feeds of the 1959 amendment to Canadian sales tax exemptions.

"After persistent efforts for a number of years, sales tax was removed from feed ingredients and the wording of the Excise Tax Act revised to exempt from tax 'ingredients used in the manufacture or production of feed for poultry, cattle and other stock and fur-bearing animals,'" he said. "A further exempt was granted by amendment to the act in the recent budget."

Mr. Hendrick referred to the following statement from a tariff consultant who has represented the association for several years:

"The following have been exempt from sales tax for several years:

"1. Materials to be used in the manufacture of feeds for poultry, cattle and other stock and fur-bearing animals.

"2. Feeds for fur-bearing animals whose pelts have commercial value.

"3. Poultry cattle and other stock foods.

"The exemption for materials under 1 (above) is limited to feed manufacturers and does not apply to farmers mixing their own feeds and applies to all materials including antibiotics.

"The 1958 budget added the following item to the list of exemptions:

"4. Stock conditioners, condiments and feed supplements for addition to poultry, cattle and other stock feeds.

"The 1959 budget amended the 1958 exemption on stock conditioners to read: Feed supplements for addition to poultry, cattle and other stock feeds and materials to be used exclusively in the manufacture thereof."

Commenting on the 1959 amendment, the bulletin made the following statements:

"Stock conditioners and condiments are now subject to sales tax.

"Feed supplements are products added to a feed to supply nutrients, namely proteins, carbohydrates, fats, minerals or vitamins.

"The exemption for 'feed supplements for addition to poultry, cattle and other stock feeds' is an unconditional exemption, that is, farmers, feed manufacturers and all others are entitled to claim exemption from sales tax, but the exemption for 'materials' is limited to feed manufacturers provided they furnish a certificate that the materials are to be used exclusively in the manufacture of feed supplements."

Heads Cattle Group

BAKERSFIELD, CAL.—Robert T. Beechinor, Beechinor Cattle Feeding Co., Bakersfield, recently was elected president of the California Cattle Feeders Assn. at a board of directors organization meeting which followed the sixth annual meeting of the association here. Mr. Beechinor succeeds Ed C. Rutherford, Orita Land & Cattle Co., Brawley, who was reelected to the board.

Reelected to serve as officers for the coming year are: Roy F. Benton, Roy F. Benton Feed Yard, Walnut, first vice president, and Keith Mets, Holtville, vice president for the Imperial Valley area. George N. Tucker, Los Angeles, was reappointed by the board as manager-secretary, and A. H. Jehl, Citizens National Bank, Vernon branch, as treasurer.

Holds Demonstration

JEFFERSON, IOWA—Elevator operators throughout the state of Iowa were guests of the Shriver-Van Horn Co., Jefferson, recently for a demonstration of the new Dunbar Kapple Vac-U-Vator. Iowa dealers for Vac-U-Vator, the firm held the demonstration "to show the versatility and increased capacity of the new model."

FARMERS EXCHANGE OPENS

SCOTTSBORO, ALA. — The Farmers Mutual Exchange recently opened here as a supply point for Cooperative Mills feeds and other farm needs and services. John E. Ransom, former manager of the Farmers Mutual Exchange at Adel, Ga., is manager.

Concrete and Pasture Pig-Feeding Compared

TIFTON, GA. — Tests conducted here recently at the Georgia Coastal Plain Experiment Station resulted in no great differences between fattening pigs on conventional pasture and on concrete floor pens.

Good rates of gain were obtained from both methods, but pigs on pasture gained some faster than those on concrete. Costs were $356 for fattening three groups of pigs on the concrete pens compared to $297.50 for the three groups fattened on pasture.

The research workers reported little difference in average amount of feed needed to produce 100 lb. gain.

Pigs fattened on concrete-floored pens dressed out slightly higher than comparable pigs fattened on pasture, but there was hardly any difference in length of carcass, thickness of backfat or area of loin eye muscle. Also, there was no significant difference in incidence of internal parasites.

The researchers conducted three tests involving 520 pigs, half of them fattened on pasture and the other half on concrete. Each group received the same grain mixtures of feed. The pasture pigs had for forage Coastal Bermuda grass, oats and Starr millet.

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Why the Boom in Poultry Output?

By Vern F. Steckley
APHF President

The number of persons who yearn to enter the poultry business must be equivalent to the urban population of the U.S. Even now, in the face of diminishing net returns per production unit it appears that the volume of new poultry projects in the blueprint or construction stage is on the increase instead of declining.

Vern F. Steckley

Folks always have wanted to leave the city behind for a "little place in the country and raise a few chickens," but the size of the new installation doesn't indicate ventures by retired persons. Is the poultry industry getting more than its share of speculators, exploiters and plungers? What's behind it all?

EDITOR'S NOTE: In this article Vern F. Steckley, president of the American Poultry & Hatchery Federation, presents some of his views on the seemingly endless increases in broiler and egg production. The article is from Mr. Steckley's column in American Hatchery News, official publication of the APHF. The author is president of Steckley's Mill & Hatchery, Inc., Kendallville, Ind.

How much of our new production can be traced to outsiders? How much of it is coming from folks hoping to make a quick profit? One wonders what percentage gets into the battle in the hope of a killing or a lucky strike.

Perhaps they have read articles in our farm publications, trade papers and extension service material reporting farm flock records of $2.50 to $3 per bird profit in eggs. A little mental calculation sends their minds reeling —$3 a head. Let's see. If one had 333,000 layers. One million dollars in a single year! Wow!

Sucker List?

It's only a theory—open to challenge—but it occurs to me that there is a lot of outside money coming into the poultry business—particularly for laying flocks and turkeys—and much of it is invited in by our own people. At the present rate of expansion it looks like the industry may have gotten hold of a good sucker list.

How much production is engendered by false pride . . . such as might result from the work of trade associations, the extension service and civic groups who launch drives to "make our area self-sufficient" in eggs, broilers or turkeys? Would you suspect the volume created by these groups to be large or small? The fact that an area is on an importing basis might encourage one to enter the business in the belief that he would have a marketing edge on the "foreigners," but it doesn't sound reasonable to expect anyone to launch a big-scale plan for patriotic reasons. The profit motive alone must prevail.

It's not relevant to the moment but perhaps the real tragedy in the "make our area self-sufficient" propaganda is that it gives false courage to smaller producers who don't always have all the facts at hand. It may be positively unsound economically for an area to become self-sufficient in poultry. That seldom stops the local flagwavers who have no intention of sinking their own money in such projects.

New Local Industries

More likely to succeed in creating new poultry enterprises are those promoted civically to give the region a "new industry." A broiler industry can't get underway until there is a nearby processing plant. Municipally-financed processing plants are frequently in the South. The plants are leased to private companies.

How about production that accrues from an expediency? For example, an investor finds himself with a large, run-down farm on his hands. He may have acquired a large building or he may simply find himself with some idle capital. He decides from a cursory investigation or from something he has read that tidy sums are being made in chickens. He decides on a 150,000-bird project because he always thinks big.

In one state, a group of investors owning a limestone quarry, having quarried all the stone they can, now is casting about for some use to which they can put the 1½-million sq. ft. hole in the ground. What are they considering? You guessed it—caged layers.

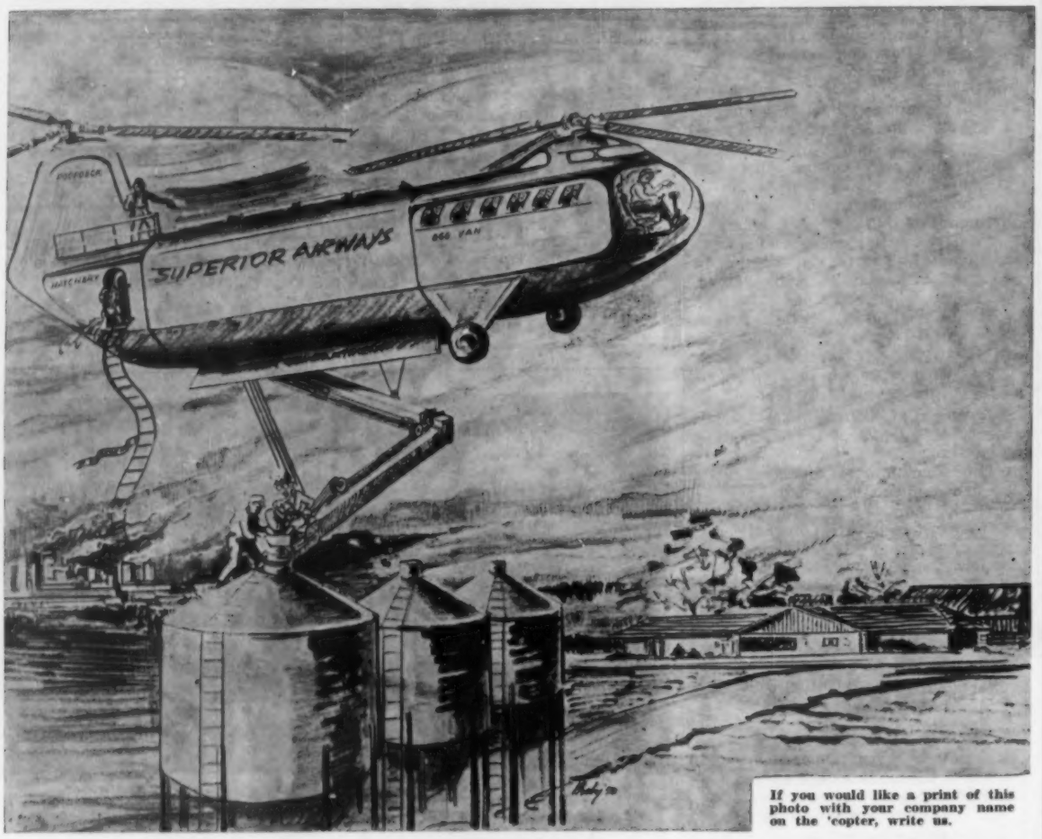
Why chickens? Why not an automobile assembly plant, a machine tool plant, a garment factory or one of the first plants to be nuclear-weapon proof? A controlled climate would be just as beneficial to one of these plants as to an egg-laying installation. Are chickens favored because it's such a simple business to establish? Capital needs are low and there always is a ready market, albeit often at low prices. Is it because you can get into and out of the business in a hurry?

A Better Advantage?

How much of the new production can be traced directly to manufacturers and suppliers who are endeavoring to convert their industry products into cash through chickens via the most direct route? They seek efficiency and a competitive advantage. After all, what is the poultry business other than a manufacturing process through which man uses birds to convert labor, feed, buildings and equipment into eggs or meat which he sells for currency?

As we witness the present rush toward contract farming in eggs and turkeys, one thing becomes obvious: Either it's the beginning of the end for the small flock, or the end of the beginning of the mass production type enterprise. They shortly will run head-on into one another and something will give.

The momentum with which larger, automated production systems are being accepted, and the shortened distance between the egg manufacturing plant and the consumer's table astound even members of the poultry industry who have been conditioned to change by the broiler business.



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Club Plans Golf Party

CINCINNATI — The annual golf party of the Cincinnati Feed Club will be June 11 at the Summit Hills Country Club in nearby Kentucky, it was announced by Charles Fedders, chairman of the club's program and golf committee.

KANSAS

(Continued from page 1)

Co., Salina; H. J. Gudenkauf, Frankfort Grain Co., Frankfort, and J. H. Voss, Voss Grain & Seed Co., Inc., Downs. Mr. Morrison becomes an ex-officio member of the board. O. E. Case was again appointed executive secretary-treasurer.

Grain Bank Problems

Custom feed millers in Kansas face several problems in employing the grain bank system in their businesses, as was pointed out by Georgell Douglass, warehouse examiner, warehouse division, Kansas State Grain Inspection & Weighing Department, Kansas City, Mo.

The grain warehousing law does not provide for grinding of grain stored in a bonded warehouse, Mr. Douglass said. The law contemplates that the producer is entitled to delivery of the grain he put in the warehouse on demand. Inspectors may not take into account any grain other than actual unground and unmixed grain when examining a warehouse, posing another problem.

The way around these problems of operating a grain bank in conjunction with a licensed warehouse, Mr. Douglass indicated, is to keep two separate sets of books.

But there are then the problems with the Kansas feed law. At present, custom mixed feed is not classed as a commercial feed. The labeling, analysis and tonnage tax provisions are not being applied to custom mixed feed. However, Mr. Douglass relayed information to the group from other state officials that feed mixed under the grain bank system will have to be classed as a commercial feed, unless special legislation is passed. This means that each operator would have to register each formula and pay a tonnage tax on it.

In his discussion of the economics of the grain bank, Leonard W. Schruben, professor of agricultural economics, Kansas State University, Manhattan, stressed the importance of complete honesty by persons operating grain banks. Complaints involving feed that does not live up to the formula ordered and paid for could bring strict enforcement of the commercial feed law for grain bank operators, he said.

Mr. Douglass said that the state did not want to make it impossible for custom plant operators to employ the grain bank if such a method is advantageous to their businesses, but he stressed the fact that the public must be protected.

State officials in Nebraska have said that the grain bank is illegal there. In Iowa, Mr. Douglass said, they are trying to work around the existing law in some way.

Dr. Schruben said that the emphasis on complete pelleted rations because of their greater efficiency has helped stimulate the grain bank system. Another factor is that the cost of storage in large amounts is less than for a farmer with smaller space.

Although there is not too much of this type of operation in Kansas, it has proved very popular in other areas, Dr. Schruben noted. "I don't expect it to be so big in Kansas because farm units are generally larger and there are not so many in a given area. Also, the grain handling in the state is geared to moving grain out of state."

Dr. Schruben did say that it appears there will be more livestock feeding in Kansas because of the growing grain sorghum production. He pointed out that in most years, the grain sorghum-hog ratio is more favorable in the Southwest than the corn-hog ratio is in Iowa.

The key to success of a grain bank is confidence of the customer, Dr. Schruben emphasized. Since the regulations are limited, a farmer must feel that he is being treated fairly, or he will not use the grain bank.

"Before you adopt a grain bank system," he advised custom mill operators, "examine your community to see that there are enough farmers who would use it. Then test out prospects to see what their reaction would be. If it is favorable, set up your program on a business-like basis and make sure you aim at getting the complete confidence of your customer."

In another talk, Dr. Schruben analyzed the changes that are occurring in agricultural production and marketing. As to whether integration is good or bad, he said it is impossible to say since it is a matter of personal opinion at this time. But if integration is defined as a combining of two or more steps in the production and marketing of farm products, it is certainly here, he said.

The speed with which it spreads and how far it goes depends on how well the smaller farmers and businesses serving those farms fare in the battle for survival. Dr. Schruben said that the age of specialization is making it more possible for small firms to compete with the big ones. It is possible to employ specialists on a consulting basis that can give a small business the same type of expert as the big business who has him on its payroll.

Economic pressures leading to integration, Dr. Schruben said, include mass retailing, improved knowledge of quality control of food products, increasing need for capital, need for shifting some of the risk in large operations, and need for skilled management.

Dr. Schruben predicted that there will be more specialization on the farm. He said there is a slow trend toward farm corporations. He foresaw the disappearance of the open market as a price setter, with products being turned out to specifications at a set price. Then, he said, the central markets would become assembling points. "These trends will lead to a decreasing political influence of the farmer, but will give him more economic bargaining power," he said. "And, there will be more government and more price regulations.

"In the long run, integration stands to provide a more efficient agriculture, even though it works hardships on some. It means the heat is on in terms of your service to farmers," he told the dealers. "You have to run to just stand still."

GFDNA President Speaks

Madison Clement, president, Grain & Feed Dealers National Assn., Waco, Texas, predicted that "no new legislation will come out of the present Congress as far as the farmer is concerned."

He said there has been much criticism of the secretary of agriculture and Congress because of the billion dollars a year paid out for storage, handling and interest on surplus crops. Mr. Clement exonerated farmers on surpluses and blamed the increase in surplus costs on the failure of government price and crop control programs.

Raymond J. Pollock, director, grain division, U.S. Department of Agriculture, said technological advances and the farmers' ability to produce have brought about a failure of the price support program.

He said the only way price supports could be made effective would be to "tighten controls enough to pinch everyone in the farm program." But this, he said, was hardly likely "as the farmers never really wanted to be controlled in the first place."

Mr. Pollock defended present grain price support levels, stating that they were established after careful study, and applauded grain dealers for constructing ample storage space and farmers for their efforts in storing crops on their land.

He said there will be ample storage space in Kansas and the nation for this year's crop.

During the business meeting of the association it was reported that membership hit a new high of 672 on Dec. 31, 1958, an increase of 20% over the previous year.

INTERNATIONAL SYMPOSIUM—J. D. Sykes (left), vice president, Ralston Purina Co., St. Louis; Howard L. Roach (center), president, Soybean Council of America, Inc., and Hugh O. Dermody, assistant general manager, agricultural division, Chas. Pfizer & Co., Inc., are shown at the reception at the Statler Hilton Hotel, Washington, given by the Soybean Council for delegates to the International Animal Feed Symposium. The symposium, with visitors from Europe, began May 4 in Washington and will continue through May 12 at private and public research facilities and other points.

Other convention speakers and their topics were: Paul Ross, Wichita Terminal Elevator, Inc., "The Handling of Grain and Flour Milling in Russia"; Zenas Beers, regional director, National Plant Food Institute, Chicago, "Your Farmers! What Sights Do They Set?"; Floyd Smith, professor of soils, Kansas State University, "Fertilizer Recommendations in Kansas"; John V. Soppitt, supervisor, U.S. Department of Labor, Wichita, "New Salary Requirements for White Collar Employees Under the Federal Wage-Hour Law."

Arthur Creten, Jr., director, warehouse division, Kansas State Grain Inspection & Weighing Department, Kansas City, "State Warehouse Activities in Kansas"; Jim Anderson, Food & Drug Administration, Kansas City, "Progress of the Grain Sanitation Program of the Food & Drug Administration"; J. E. Elstner, officer in charge, USDA, AMS, grain division, Kansas City, "Unevenly Loaded Cars of Grain"; Norman V. Whitehair, specialist in grain marketing, extension division, Kansas State University, "Extension Service Can Serve You"; Donald E. Smith, director, CSS commodity office, Kansas City, "Activities of the Kansas City Commodity Office"; Wendell Becraft, state administrative officer, state ASC committee, Manhattan, "ASC Price Support Operations in Kansas."

Film strips on grain inspection methods for grain sorghum and wheat were shown through the courtesy of Seedburo Equipment Co., Chicago.

Nearly 40 firms had exhibits at the convention. Social hours on all three nights in the exhibit area gave convention-goers a chance to view the displays. A banquet, floor show and dancing completed the convention activity.

Seminar to Review Animal Nutrition

ST. PAUL — Recent experimental work conducted in sheep, dairy and poultry nutrition at the University of Minnesota will be reviewed at the May 19 meeting of the Twin City Nutrition Seminar, it was announced by J. Wesley Nelson, Cargill, Inc., Minneapolis, seminar secretary.

Speakers will be Dr. Robert Jordan, department of animal husbandry; Dr. Jess Williams, department of dairy husbandry, and Dr. Paul Waibel, department of poultry husbandry.

R. M. Edstrom, Glencoe (Minn.) Mills, will chairman the meeting which is to start at 7:30 p.m. in Peters Hall on the St. Paul campus. The business session will include election of officers.

SYMPOSIUM

(Continued from page 8)

the AFMA convention may lay the cornerstone of U.S. feed industry expansion around the world. The feed industry—one of the major contributors to the defeat of inflation—may again contribute to world influence as it responds to the interests of these foreign feed specialists.

Dramatic Development

The foreign visitors learned from J. D. Sykes, Ralston Purina Co., St. Louis, that the story of the feed industry in America cannot be separated from the dramatic development of animal agriculture.

"Prior to 1900 there was little science in the feeding of poultry and livestock," Mr. Sykes said. "Farmers today, by using scientific-formula feeds and improved management methods, are efficiently producing high-quality livestock and poultry."

Mr. Sykes cited these facts of progress in which the feed industry can claim a share:

- In the 1930's it took about twice as much feed to produce a dozen eggs or a chicken as it does now.
- A generation ago it took an average of about 11 lb. feed to produce a pound of beef. Today, it takes 7½ lb.
- About 25 years ago it took an average of around 5 lb. feed for each pound pork. Now good hog raisers use slightly more than 3 lb.

Mr. Sykes noted that the feed industry has become the largest industry serving agriculture, with an annual volume of some $3½ billion.

"Cooperative competition has been a force in the growth of the feed industry," he said. "In 1932, only 6.2 million tons of commercial feeds were manufactured in this country. In 1958, approximately 40 million tons were manufactured."

(Summaries of other symposium talks, including reports by college and industry scientists, will appear in a subsequent issue of Feedstuffs.)

Feed Stores Fumigated

EL PASO, TEXAS — Two feed stores here were fumigated as a khapra beetle control measure.

An official of the U.S. Department of Agriculture said two other feed stores and a dairy plant would have to be fumigated to eradicate the major infestations. Those fumigations, he said, would be followed up with the methyl bromide gas treatment of several smaller infestations, mostly small customers of the beetle-infested feed stores.

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Denver: Demand fair; trend steady; supply ample; 300 D, 2,250 A 23¢ lb.

Boston: Demand fair; supply adequate; 600 D, 1,500 A 17½¢ lb.; 300 D, 3,250 A 18¢; 300 D, 1,500 A 16½¢; 300 D, 750 A 14¾¢; 400 D, 3,000 A 20¢; 300 D, 3,000 A 19½¢; 75 D, 750 A 14½¢.

Chicago: Demand fair; supply ample; straight A feeding oil, with 10,000 units vitamin A per gram, 7@7½¢ a million units of vitamin A, l.c.l., packed in 55-gal. drums, f.o.b. Chicago, drums included.

New York: Demand fair; trend steady; supply limited; price per lb. in 55-gal. drums (413 to 420 lb.): 300 ICU, 750 A 13⅛@15½¢, 1,500 A 15½@17¢, 2,250 A 17½@20¢, 3,000 A 19@21¢; 600 ICU, 1,500 A 16@18¢, 2,250 A 18@19½¢; f.o.b. Massachusetts, New York or Pennsylvania.

Minneapolis: 10,000 A 35¢ lb.; 300 D, 2,250 A 21¼¢ lb.; 300 D, 1,500 A 20¼¢ lb.; 300 D, 75 A 18⅛¢ lb.

ALFALFA MEAL

Chicago: Demand slow; supply light; new crop, 17% dehydrated, with 100,000 units vitamin A guaranteed $67.50; 15% No. 1 fine ground suncured, no quotes.

Kansas City: Demand fair; trend generally steady with a few new crop offerings being made at lower prices; supply quite tight, especially for processed material, first cuttings are light and plants are not operating at a steady pace. Nebraska points should be producing on limited basis next week; dehydrated alfalfa with 17% protein and 100,000 units vitamin A guaranteed on arrival: reground pellets $65 sacked, greased meal $67; occasional car of new crop unprocessed meal $57.50 burlaps; pellets $60 bulk, a few offered at $55; 18% protein, 125,000 A meal $69 sacked; 20% protein, 150,000 A pellets $62 bulk, in limited quantity with blenders buying some of this material to keep stocks up; suncured meal demand is slow and offerings light, No. 1 fine ground meal $35.50, No. 1 ¼-in. $32.50, No. 2 ¼-in. $31.50, sacked.

Ft. Worth: Demand fair; supply sufficient; 20% 150,000 A $66; 17% 100,000 A $63, truck.

New Orleans: Demand good; supply light; trend steady; vitamin A 17% $79@80; pellets $77@79.

Boston: Demand slow; supply ample; dehydrated, 17% $80; suncured, 13% $48, nominal.

Denver: Demand fair; trend steady; supply ample; dehydrated $52.

Portland: Demand good; trend unchanged to lower; supply limited on suncured, ample on dehydrated; suncured 15% $42; dehydrated $65.50.

Philadelphia: Demand and supply fair; trend unsettled; 17% dehydrated $78.50.

St. Louis: Demand slow; trend steady; supply increasing; suncured, 13% fine $39; dehydrated, 17%, 100,000 A $65.

Los Angeles: Demand fair; trend steady; supply ample; dehydrated meal, 17% protein, 100,000 A $51 bulk; dehydrated pellet meal, 17% protein, 100,000 A $53 bulk; suncured crumbles, 15% protein $42@43 bulk; suncured meal, 15% protein $44@45 bulk.

Cincinnati: Demand fair; trend steady; supply adequate; 17% dehydrated, 100,000 vitamin A $78.50.

Buffalo: Demand fair; trend steady; supply fair; $81, Boston.

Omaha: Demand steady; trend steady; supply limited; 17% dehydrated, 100,000 A units, bulk pellets $60; sacked meal $65, Omaha basis.

Minneapolis: New crop production now under way in Kansas and Mississippi Valley. Nebraska in production next week. Price cut $5 during the week to $65 for reground pellets and $67 for oiled reground, sacked.

Memphis: Demand good; trend steady to lower; supply light; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $65.

Seattle: Demand fair; trend steady; supply good; 15% protein suncured $44, truck loads; 136,000 A unit dehydrated $69, truck loads.

ANIMAL FAT (STABILIZED)

San Francisco: Demand fair; supply ample; bleachable fancy tallow 7¼¢ lb.; yellow grease 7¼¢ lb.

New Orleans: Demand fair; trend steady; supply adequate; 7@7¼¢ lb., tank cars.

Ft. Worth: Demand good; trend firm; supply rather tight; prime tallow, tank cars 7@7¼¢ lb.; drums 8¼@8½¢ lb., f.o.b. north Texas packing plants with returnable drums.

Kansas City: Demand fair; trend steady; supply adequate; 6¾¢ lb., tank cars, for prime tallow.

Chicago: Demand steady; trend easier; supply ample; bleachable fancy tallow, tank truck or car lots 7¢ lb.; yellow grease 6¾¢ lb.

Boston: Demand and supply steady; tallow 7¾¢ lb.; yellow grease 7¢ lb.

Louisville: Demand reasonable; trend steady; supply good; bleachable fancy 7¼¢ lb., white tallow 7¾¢ lb., yellow grease 6¾¢ lb., all nominal.

Atlanta: Demand good; trend steady; supply limited; 7¢ lb.

BARLEY FEED

Los Angeles: Demand slow; trend weaker; supply adequate; standard rolled $3.15 cwt.; standard ground $3.15 cwt.

San Francisco: Demand fair; supply ample; rolled $65.50, ground $64.50.

New Orleans: Demand slow; trend unchanged; supply fair; $64@65.

NOTE: Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bagged, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

Portland: Demand good; supply ample; trend unchanged; rolled $62, ground $60.

Chicago: Demand light; trend steady; supply adequate; carlots $37.

Baltimore: Demand light; supply ample; $47.50, carlots.

Boston: Demand slow; supply good; $45.

Ogden: Supply normal; rolled $50@55; whole barley $42@47.

Philadelphia: Demand slow; supply fair; pulverized $50.50.

Milwaukee: Demand good; supply fair; needles 96¢@$1.08 cwt.; ground screenings $28.

Seattle: Demand fair; trend firm; supply good; $51.50, bulk, truck lots.

BENTONITE (SODIUM)

Cincinnati: Demand steady; supply adequate; f.o.b. Cincinnati, minimum 30-ton carlots: 80 granular $31.50; 200 mesh fine $31.

Chicago: Demand steady; trend firm; supply adequate; f.o.b. Wyoming and South Dakota shipping points: granular, 30 mesh $16.50; fine granular, 80 to 100 mesh $13.75; powder, 200 mesh $13.50, f.o.b. Belle Fourche, S.D., minimum 30-ton carlots, 80 granular $13.50 net; 200 mesh, fine $13.25 net.

Denver: Demand fair; trend good; supply ample; $23.

BLOOD FLOUR

Louisville: Demand fair; trend steady; supply ample; $120@125.

BLOOD MEAL

Chicago: Demand and supply fair; trend lower; guaranteed 80% protein $135.

San Francisco: Demand good; supply tight; $3 a unit of ammonia.

Los Angeles: Demand fair; trend steady; supply adequate; $7.50 a unit of ammonia.

New Orleans: Demand slow; trend unchanged; supply fair; $120@125.

Portland: Demand good; supply ample; trend unchanged; $130.

Ogden: Supply normal; $110, in 100-lb. bags, f.o.b. Ogden.

Louisville: Demand fair to good; trend steady; supply normal; $120@125.

BONE MEAL (STEAMED)

San Francisco: Demand good; supply ample; $75.

Cincinnati: Demand and supply fair; trend easy; $105, Cincinnati.

Los Angeles: Demand better; trend firmer; supply tight; imported $80 in 20-ton lots.

Chicago: Demand fair; trend easier; supply limited; $105, 50-lb. bags.

Buffalo: Demand good; trend strong; supply limited; $105.

Ft. Worth: Demand good; supply light; $90, f.o.b. Ft. Worth, local manufacture.

New Orleans: Demand slow; supply light; trend steady; $105@110.

Denver: Demand good; trend strong; supply nil; $110, nominal.

Boston: Demand and supply steady; $90.

Portland: Demand good; supply ample; trend unchanged; $100.

Louisville: Demand reasonable; trend steady; supply light; $105@115.

Seattle: Demand good; trend firm; supply limited; $87, ex-dock, truck lots.

BREWERS DRIED GRAINS

St. Louis: Demand fair; trend steady; supply ample; $47.

Buffalo: Demand fair; trend lower; supply good; $46, bulk, Boston.

San Francisco: Demand fair; supply ample; $54.

Los Angeles: Demand fair; trend unchanged; supply limited; $49.50 bulk, $53.50 sacked.

Cincinnati: Demand poor; trend steady; supply adequate; $55.

Ft. Worth: Demand slow; supply moderate; 26% protein $54.50, May.

New Orleans: Demand fair; trend steady; supply ample; $52@53.50.

Philadelphia: Demand and supply fair; trend unsettled; $55.50.

Chicago: Demand and supply fair; trend easier; 26% $48.50.

Boston: Demand fair; supply adequate; 22% $52.50@53; 24% $50, bulk, out of Toronto; 26% $58.

Louisville: Demand fair; trend easy; supply good; $49, off $1.

Milwaukee: Demand good; supply fair; $48.

BREWERS DRIED YEAST

Buffalo: Demand fair; trend steady; supply fair; $10.66 cwt.

Omaha: 10¼¢ lb.

San Francisco: Demand fair; supply good; 10¢ lb.

Los Angeles: Demand fair; trend unchanged; supply limited; 10¢ lb. in 5-ton lots; 11¢ lb. in 1-ton lots; 12¢ lb. in less than 1-ton lots.

Denver: Demand light; trend steady; supply ample; 9¢ lb., f.o.b. Golden, Colo.

Portland: Demand good; supply ample; trend unchanged; 8⅛¢ lb.

Chicago: Demand very good; supply ample; in carlots 9⅛@10¼¢ lb.; l.c.l. 9⅝@12¼¢ lb.

Boston: Demand and supply steady; 11¢ lb.

Louisville: Demand slow; trend steady; supply good; 10@10½¢ lb., asked.

Seattle: Demand slow; trend steady; supply ample; $12 cwt.

St. Louis: Demand good; trend steady; supply limited; carlots 9½¢ lb.; ton lots 10½¢ lb.; less than ton lots 11½¢ lb.

Milwaukee: Demand good; trend steady; supply limited; carlots 10@11¢ lb.; l.c.l. 10⅛@12¼¢ lb.

Cincinnati: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

Pittsburgh: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

New Orleans: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

New York: Carlots 9½¢ lb.; 10-ton lots 10¢ lb.; 5-ton lots 10½¢ lb.; ton lots 11¢ lb., f.o.b. New Jersey.

BUTTERMILK-CONDENSED

Boston: Demand slow; supply tight; 2½¢ lb.

New Orleans: Demand slow; supply normal; trend steady; $4.25@4.30 cwt.

Philadelphia: Demand slow; supply light; $4.25 cwt.

Los Angeles: Demand fair; trend unchanged; supply adequate; 5½¢ lb. in 100-lb. lots; 4½¢ lb. in 500-lb. lots.

San Francisco: Demand fair; supply good; $5 cwt.

Chicago: Demand and supply fair; trend steady; $3.25@3.50 cwt., carlots.

Ogden: Supply average; $4.40, 100-lb. drum.

Wichita: Demand slow; supply good; $2.90 cwt. in barrels.

Louisville: Demand dull; trend steady; supply light; $4.25 cwt., nominal.

CALCITE CRYSTALS AND FLOUR

(All prices net, including freight)

New York: Crystals $15.28, flour $10.28.
Buffalo: Crystals $16.11, flour $11.11.
Toledo: Crystals $17.96, flour $12.96.
Boston: Crystals $16.53, flour $11.63.
Limecrest, N.J.: Crystals $10.50, flour $5.50.

CALCIUM CARBONATE

Los Angeles: Demand fair; trend unchanged; supply ample; $10.25.

Cincinnati: Demand fair; trend steady; supply adequate; $8@9 cwt.

Chicago: Demand steady; trend firm; supply adequate; fine grind, plain, 100-lb. bags $9.54; bulk, in hopper cars $7.54; bulk in boxcars $8.04; granular grind $1 premium.

Minneapolis: Fine grind, 50-lb. bag $12.25, 100-lb. bag $11.50; bulk, boxcar $10; bulk hopper $9.50; coarse grind $1 premium, delivered Minneapolis.

Seattle: Demand and trend steady; supply good; $14, ex-warehouse, truck lots.

CHARCOAL

San Francisco: Demand steady; supply ample; $141.

Los Angeles: Demand fair; trend unchanged; supply adequate; hardwood poultry $156 in less than ton lots; $144.40 in ton lots.

Chicago: Demand quiet; trend steady; supply ample; poultry charcoal, in 50-lb. multiwalls $116.

Boston: Demand and supply steady; $100.

COCONUT OIL MEAL

San Francisco: Demand good; supply tight; solvent $65; expeller $79.

Los Angeles: Demand slow; trend easier; supply ample; copra cake $74@75, bulk, spot and offshore.

Portland: Demand slow; supply limited; trend unchanged; $68.

Seattle: Demand fair; trend easy; supply ample; $75, via truck (California).

COD LIVER OIL (FORTIFIED)

Boston: Demand fair; supply adequate; 600 D, 2,250 A 19¢ lb.; 300 D, 3,000 A 20½¢; 300 D, 2,250 A 18½¢; 600 D, 1,500 A 18¢; 300 D, 1,500 A 17¢.

New York: Demand limited; trend steady; supply fair; price per lb. in 55-gal. drums (413 to 420 lb.): 300 ICU, 750 A 14½@15½¢; 1,500 A 18½@20¢, 2,250 A 18½@21¢, 3,000 A 21½@23¢; 600 ICU, 1,500 A 17½@19¼¢, 2,250 A 20@22¢, 3,000 A 22@23¢; f.o.b. Massachusetts, New York or Pennsylvania.

CONDENSED FISH SOLUBLES

Los Angeles: Demand fair; trend unchanged; supply limited; 5¢ lb.

Boston: Demand steady; supply improved; 5¢ lb.

Denver: Demand fair; trend steady; supply ample; dried $182.40, f.o.b. Denver.

New Orleans: Demand light; trend steady; supply limited; 50% solid $108@111.

New York: Demand fair; trend steady; supply tight; 5¢ lb., f.o.b. eastern shore.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are sacked basis, bulk basis $5 less)

Minneapolis: Feed $51.80, meal $79.80.
Atlanta: Feed $57.98, meal $85.98.
Birmingham: Feed $56.84, meal $84.84.
Boston: Feed $56.84, meal $84.84.
Chicago: Feed $45, meal $73.
Cleveland: Feed $53.14, meal $81.14.
Denver: Feed $55.51, meal $83.51.
Ft. Worth: Feed $53.96, meal $81.96.
Indianapolis: Feed $50.36, meal $78.36.
Kansas City: Feed $45, meal $73.
Louisville: Feed $52.21, meal $80.21.
New Orleans: Feed $55.20, meal $83.20.
New York: Feed $56.43, meal $84.42.
Norfolk: Feed $55.71, meal $83.71.
Philadelphia: Feed $56.02, meal $84.02.
Pittsburgh: Feed $53.96, meal $81.96.
St. Louis: Feed $45, meal $73.

CORN OIL MEAL

Cincinnati: Demand fair; trend steady; supply adequate; $53.

Louisville: Demand dull; trend steady; supply light; $56.45.

COTTONSEED OIL MEAL

Los Angeles: Demand and trend steady; supply scarce; $71@72, bulk.

San Francisco: Demand good; supply tight; 41% $77; 44% $79.

St. Louis: Demand slow; trend steady; supply fair; solvent $68.

Buffalo: Demand fair; trend steady; supply good; $80.50, Boston.

Cincinnati: Demand poor; trend steady; supply adequate; $70.50.

Ft. Worth: Demand slow; supply sufficient; 41% old process $71, prompt; pellets $2 additional; cottonseed hulls $10.

Kansas City: Demand slow; trend steady; supply adequate; solvent meal $62@63, Memphis; old process $63.

Omaha: Demand slow; trend steady; supply ample; 41% solvent $67.10, bulk.

Chicago: Demand slow; trend firm; supply good; hydraulic $63; solvent $62; Memphis basis.

New Orleans: Demand fair; trend steady; supply adequate; $75@75.50.

Boston: Demand poor; supply ample; $82.

Philadelphia: Demand slow; supply fair; $80.

Portland: Demand slow; supply limited; trend unchanged; $78.

Denver: Demand fair; trend steady; supply ample; $70.60.

Ogden: Supply average; 41% $77@82.

Wichita: Demand poor; supply sufficient; 41% old process $72.

Memphis: Demand slow; trend easier to lower; supply light; prime 41% protein, old process $62; new process, 41% solvent $61, nominal.

Louisville: Demand slow; trend firm; supply normal; old process $69; new process $68.

Atlanta: Demand poor; trend steady; supply ample; 41% $69.

Seattle: Demand fair; trend steady; supply ample; 41% expeller process $85, truck lots.

CURACAO PHOSPHATE

New York: Demand steady; ground Curacao phosphate in 100-lb. bags $48, f.o.b. cars or trucks, New Orleans, Jacksonville, Fla., or Philadelphia.

D ACTIVATED ANIMAL STEROL (POWDERED)

Cincinnati: Demand fair; trend steady; supply ample; 1,500 ICU 11@12¢ lb.; 3,000 ICU 18¢ lb., warehouse.

Kansas City: Demand fair; trend steady; supply adequate; 1,500 ICU 9%@10¢ lb.; 3,000 ICU 11½@12¢ lb. in ton lots.

New York: Demand and supply good; trend steady; price per lb. in 50- and 100-lb. bags or 100-lb. drums: 1,500 ICU 8@12¢ bagged, 12@13¢ drums; 3,000 ICU 13@17¢ bagged, 17@18¢ drums; f.o.b. or delivered basis Pennsylvania, Delaware or New York.

D ACTIVATED PLANT STEROL (POWDERED)

Chicago: Demand good; supply fair; 4,000,000 U.S.P. units per lb., 15¢ lb. in ton lots, less than ton lots 17¢ lb.; 12,000,000 units per lb., 5 tons to a carload 28¢ lb., ton lots and less 30¢ lb.

DEFLUORINATED PHOSPHATE

Tupelo, Miss.: Minimum phosphorus 13%, minimum calcium 31%, maximum fluorine .12%, $51 net ton, f.o.b. Tupelo in 100-lb. multiwall bags, $48 in bulk.

Wales, Tenn.: Minimum phosphorus 18%, minimum calcium 33%, maximum calcium 36%, maximum fluorine .18% $69.13 net ton, f.o.b. Wales in 100-lb. multiwall bags, $3 less in bulk.

Houston: Minimum phosphorus 19%, minimum calcium 32%, maximum calcium 36%, maximum fluorine .19% $71.50, net ton, f.o.b. Houston, 100-lb. multiwall paper bags; $68.50 in bulk.

Coronet, Fla.: Minimum phosphorus 18%, minimum calcium 31%, maximum calcium 34%, maximum fluorine .18%; carlots $63.50, truck load $64.25, net ton, f.o.b. Coronet in 100-lb. multiwall bags $60.50 and $61.25 in bulk.

Cincinnati: 18% phosphorus $81; 13% phosphorus $64.93, f.o.b. Cincinnati.

DICALCIUM PHOSPHATE

Chicago: Stock food grade, 18.5% phosphorus, 20,000 lb. or more $83.25 net ton in 100-lb. papers, basis Chicago Heights, Ill., or Nashville, Tenn.; less than 20,000 lb. $93.25; 21% phosphorus, 20,000 lb. or more $94.50, basis Chicago Heights and Nashville; less than 20,000 lb. $104.50; bulk boxcars or hoppers $3 net ton less than bagged material.

Bonnie, Fla.: Minimum phosphorus 18½%, granular $83.25; freight equalized with closest producing point, carload basis.

Texas City, Texas: 18.5% minimum phosphorus, 21% minimum calcium, 24% maximum, granular $77.70 net ton, f.o.b. Texas City in 100-lb. multiwall bags; bulk, boxcars and hoppers, $3 net ton less than bagged material.

Columbia, Tenn.: Minimum phosphorus 18½%, minimum 25% calcium, maximum .01% fluorine guaranteed $83.25, f.o.b. Columbia, in 100-lb. multiwall bags; freight equalized with nearest producing point, carload basis; bulk $3 ton less.

Minneapolis: 18.5% phosphorus, 24% calcium granular or fine ground $96.10, delivered; $3 less in bulk.

Trenton, Mich.: Minimum phosphorus 18½%, maximum fluorine .03% guaranteed $83.25, f.o.b. Trenton in 100-lb. multiwalls; minimum phosphorus 21%, maximum fluorine .03% guaranteed $86.50, f.o.b. Trenton in 100-lb. multiwall bags.

Cincinnati: 18½% phosphorus $93@93.

Denver: Demand fair; trend steady; supply ample; $93.60.

Portland: Demand good; supply ample; trend unchanged; $118.

DISTILLERS DRIED GRAINS

Boston: Demand good; supply light; domestic light $58, dark $59, both bulk; Canadian light, sacked $62.

San Francisco: Demand fair; supply ample; solubles $35.

Cincinnati: Demand poor; trend steady; supply adequate; by truck $53.50.

Philadelphia: Demand dull; trend unsettled; supply light; lights $62, darks $63.

Buffalo: Demand fair; trend steady to lower; supply good; $57.50, bulk, Boston.

Louisville: Demand fair; trend steady; supply ample; May prices, bourbon grains, light $54; dark $55; solubles $77.

Seattle: Demand good; trend steady; supply limited; $67, truck lots.

DRIED BEET PULP

Buffalo: Demand and supply fair; trend steady; $60, Boston.

Los Angeles: Demand steady; trend unchanged; supply ample; molasses $47.30, bulk.

San Francisco: Demand good; supply fair; $51.50.

Ft. Worth: Demand slow; offerings light; carlots, 50-lb. papers $61.

New Orleans: Demand fair; trend steady; supply limited; $60@61.

Boston: Demand fair; supply adequate; domestic $60; Canadian $61.50.

Denver: Demand good; trend steady; supply ample; $49.23.

Portland: Demand good; supply limited; trend unchanged; $56.

Ogden: Supply average; $44@48.

Milwaukee: Demand good; supply fair; plain $54; molasses $54.

Atlanta: Demand fair; trend steady; supply limited; $65.70, 100-lb. burlaps; $68.15, 50-lb. papers.

Seattle: Demand good; trend firm; supply limited; $49, carlots.

DRIED BUTTERMILK

Buffalo: Demand good; trend steady; supply limited; $11.85 cwt.

San Francisco: Demand fair; supply ample; 11½¢ lb.

Los Angeles: Demand fair; trend unchanged; supply adequate; 11¾¢ lb.

Chicago: Demand good; trend firm; supply light; medium acid $10.75@11 cwt., carlots; sweet cream $11@11.25 cwt., carlots.

Ogden: Supply average; $8.50 cwt.

New Orleans: Demand fair; trend unchanged; supply adequate; $11.50@12 cwt.

Minneapolis: Fair demand; scarce supply; price firm at $11.50 cwt.

Louisville: Demand slow; trend steady; supply light; 12@12¼¢ lb.

Milwaukee: Demand and supply fair; steady trend; $10 cwt.

DRIED CITRUS PULP

New Orleans: Demand fair; trend steady; supply ample; $35@40, f.o.b. Florida points.

Buffalo: Demand poor; trend steady; supply adequate; $37.50, f.o.b. Florida points.

San Francisco: Demand and supply fair; meal $54.

Los Angeles: Demand steady; trend firmer; production down; orange pulp $43 bulk, lemon pulp $42 bulk.

Boston: Demand slow; supply adequate; $35, f.o.b. Florida.

Atlanta: Demand good; trend steady; supply limited; $35@40, f.o.b. Florida producing plants; meal $30@35, f.o.b.

DRIED SKIM MILK

Boston: Demand very active; supply scarce; 12¢ lb., nominal.

Philadelphia: Demand slow; supply light; $12.50 cwt.

Chicago: Demand good; trend steady; supply fair; $10.75@11 cwt., carlots.

New Orleans: Demand fair; trend unchanged; supply ample; $11@11.50 cwt.

Portland: Demand slow; supply ample; trend unchanged; 13¢ lb.

FEED INGREDIENTS
Fish Meal • Scrap • Solubles
Bigelow Sales Company
10 Bridge St. NEW YORK 4, N.Y.
Tel. HAnover 2-9195

San Francisco: Demand and supply fair; 13¼¢ lb.

Los Angeles: Demand fair; trend steady; supply adequate; 14¢ lb. in less than ton lots; 13¾¢ lb. in ton lots.

Ogden: Supply average; $15.15, 100-lb. drum.

Cincinnati: Demand fair; trend steady; supply adequate; 10¾¢ lb.

Buffalo: Demand fair; trend steady; supply ample; spray $10.65 cwt.

Louisville: Demand fair; trend steady; supply ample; 12¢ lb.

Minneapolis: Good demand for tight supplies; price steady at $11.25 cwt.

Milwaukee: Demand and supply fair; $11 cwt.

DRIED WHEY

Boston: Demand steady; supply short; 5½¢ lb.

Cincinnati: Demand fair; trend steady; supply adequate; $6.15 cwt.

San Francisco: Demand steady; supply good; $5.75 cwt.

Los Angeles: Demand fair; trend steady; supply ample; $6.10 cwt. in carloads; $6.35 cwt. in l.c.l.

Kansas City: Demand good; trend light; supply steady; $5.50 cwt., producers' plants for regular and partially delactosed.

Chicago: Demand fair; trend steady; supply adequate; $5.50 cwt., f.o.b. plant.

Ft. Worth: Demand fair; supply adequate; carlots, standard $6; $6.25 ton lots, f.o.b. warehouse, Ft. Worth.

New Orleans: Demand good; supply ample; trend steady; $5.50@6 cwt.

Denver: Demand fair; trend steady; supply ample; $6.50 cwt.

Philadelphia: Demand slow; supply light; $6.50 cwt.

Portland: Demand slow; supply ample; trend unchanged; $7 cwt.

Ogden: Supply average; $6.90 cwt.

Louisville: Demand slow; trend steady; supply light; 6½¢ lb.

Minneapolis: Demand fair; supply tight; trend steady; $5.50 cwt., producers' points.

Seattle: Demand and trend steady; supply good; $6.40 cwt., ex-warehouse, l.c.l.

FEATHER MEAL (HYDROLYZED)

Los Angeles: Demand fair; trend unchanged; supply adequate; $1.25 a unit of protein.

Ft. Worth: Demand good; supply very limited; 85% to 87% protein $105, f.o.b. trucks, north Texas plant.

Boston: Demand light; supply improved; $85, f.o.b. shipping points.

Salisbury, Md.: Good demand; limited supply; price holds at $100 bulk, f.o.b. producers' plants.

Atlanta: Demand good; trend steady; supply ample; $105.50, f.o.b. Georgia and Alabama producing plants.

FISH MEAL

Buffalo: Demand good; trend easier; supply limited; 60% menhaden $170 bulk, $175 sacked.

Los Angeles: Demand and trend steady; supply tight; local production, 60% protein $2.45@2.50 a unit.

Cincinnati: Demand fair; trend steady; supply adequate; $160.

San Francisco: Demand good; supply tight; $2.30 a unit of protein.

Ft. Worth: Demand fair; limited offerings for immediate; 65% Peruvian $152, immediate, f.o.b. Houston.

New Orleans: Demand and supply light; trend steady; menhaden 60% $150@152, scrap $146@148, f.o.b. Gulf.

Portland: Demand fair; supply limited; trend unchanged; $2.25 a unit.

Boston: Demand cautious; supply improving; $142, f.o.b. Gloucester, mid-May delivery.

Denver: Demand good; trend steady; supply very tight; $2.45 a unit of protein, f.o.b. West Coast.

Ogden: Supply average; $2.20 a unit, f.o.b. Coast; 65% $172@174.

Louisville: Demand dull; trend steady; supply light; $170, nominal.

Minneapolis: Fair demand; adequate supplies; weaker trend; 60% blended meal $180, delivered, Minneapolis; 70% herring $2.22 a unit, West Coast.

Chicago: Demand picking up; quoting new crop entirely; all sacked eastern menhaden fish meal $138@140; scrap $134@136; Northeast Coast menhaden meal $139; scrap $135; Gulf meal $140; scrap $136; Canadian herring meal $2.25@2.30 a unit for 70%; tuna meal $2.45 a unit.

Atlanta: Demand good; trend steady; supply limited; 60% $140, f.o.b. Atlantic and Gulf ports, immediate; $130@135, f.o.b., June-October, subject to catch.

Milwaukee: Demand good; supply fair; 60% $160.

Seattle: Demand fair; trend firm; supply good; $2.38 a unit protein, truck lots (Canadian production).

HAY

Denver: Demand average; trend fair; supply ample; alfalfa, baled $24@25, first and second cutting.

Ogden: Supply normal; new crop coming on nicely, aided by rains; $1@1.25 bale; $18 ton in the barn.

Cincinnati: Demand poor; trend steady; supply adequate; No. 1 timothy $24; No. 1 second cutting green alfalfa $31; mixed $27; wheat or oat straw $19.

Los Angeles: New crop U.S. No. 1 $35@37, new crop U.S. No. 2 leafy $33@34, both of good demand for top quality; U.S. No. 2 green $28@30, U.S. No. 3 $24@26, demand just fair for both.

Ft. Worth: Demand fair for alfalfa; practically nil for prairie and Johnson grass; supply sufficient; carlots, baled, No. 1 alfalfa $38@40, No. 2 $36@38; prairie No. 2 $26@28; No. 2 Johnson grass $24@26, delivered Texas common points.

Portland: Demand good; supply ample; trend unchanged; $34.

Philadelphia: Demand slow; supply light; $25@26.

Wichita: Demand poor; supply ample; prairie $15, alfalfa $12@18.

Boston: Demand and supply seasonally steady; No. 2 timothy $40@42.

Louisville: Demand very dull; trend easing; supply good; No. 1 local hay $25@30, No. 2 $23@25; straw $18@20; excellent grass and old hay plentiful.

Seattle: Demand fair; trend easy; supply good; alfalfa, U.S. No. 2 green (new crop) $28, truck lots.

HOMINY FEED

Kansas City: Demand fair; trend steady; supply tight because of large producer having shut down for a week; yellow $42.50, bulk, $3.50 more for sacks.

Buffalo: Demand fair; trend steady; supply fair; $54.50, bulk, Boston.

St. Louis: Demand slow; trend steady; supply limited; yellow $49.

Cincinnati: Demand fair; trend steady; supply adequate; $50.50@51.

Chicago: Demand good; trend higher; supply tight; $50.

New Orleans: Demand fair; trend steady; supply fair; $54@54.50.

Boston: Demand fair; supply good; $59.

Memphis: Demand poor; trend steady; supply ample; white $49, yellow $49.

Louisville: Demand slow; trend steady; supply normal; $49.

Milwaukee: Demand good; supply fair; $49.50.

Seattle: Demand fair; trend firm; supply good; $56.

LINSEED OIL MEAL

Cincinnati: Demand poor; trend steady; supply adequate; new process $87.

Los Angeles: Demand slow; trend unchanged; supply limited; local production, 29% protein, nominal $72 bulk.

San Francisco: Demand fair; supply ample; $83.

New Orleans: Demand dull; trend steady; supply ample; $87.50@88.

Ft. Worth: Demand poor; supply limited for immediate shipment; 34% solvent, immediate $91 truck; 34% new crop old process, last half May $85.50 truck.

Boston: Demand slow; supply light; $92.

Denver: Demand poor; trend steady; no offerings; no quotations.

Philadelphia: Demand and supply fair; trend unsettled; 34% $82.35, nominal.

Portland: Demand slow; trend unchanged; supply limited; $87.

Wichita: Demand good; supply insufficient; 34% $88.

Chicago: Demand light; trend lower; supply fair; solvent $70.50; expeller, no quotes, Minneapolis basis.

Kansas City: Demand slow; trend steady; no old process available, but solvent meal supply is adequate; solvent $70@70.50, bulk, Minneapolis.

Omaha: Demand fair; trend steady; supply limited; 34% solvent $78.50 bulk, 32% old process, not available, Omaha basis.

Milwaukee: Demand good; supply tight; old process $90.50; new process: $78, first half of May, $74, last half of May, all nominal.

Louisville: Demand slow; trend steady; supply ample; $88.50, either new or old process.

Minneapolis: Fair demand; light but adequate supplies; $70 bulk, for next week; most producers out of the market.

Seattle: Demand fair; trend firm; supply limited; 34% protein (Montana) $90, carloads.

MALT SPROUTS

Cincinnati: Demand fair; trend steady; supply adequate; No. 1 $39.

Chicago: Demand fair; trend firm; supply ample; No. 1, even weight bags $37.50, No. 2 no quotes; uneven weight bags $4, discount.

New Orleans: Demand fair; trend steady; supply adequate; $42@44.

Boston: Demand and supply limited; $42.50.

Milwaukee: Demand good; supply fair; odd weights $33; even weights $37.

MEAT AND BONE MEAL

Boston: Demand slow; supply plentiful; $1.50 a protein unit; converted 50% $87.50.

Buffalo: Demand just fair; trend easier; supply ample; 50% meat scraps $92.50 bulk, $97.50 sacked.

Los Angeles: Demand and trend steady; supply ample; 50% protein $2.10 a unit, bulk.

Omaha: Demand poor; trend steady; supply adequate; $100.

Cincinnati: Demand fair; trend easy; supply ample; 50% meat and bone scraps $92, Cincinnati.

San Francisco: Demand good; supply ample; $2.10 a unit, bulk.

Chicago: Demand fair; trend lower; supply small; 50% protein $102.50.

Kansas City: Demand slow; trend steady; supply adequate for demand; 50% meat and bone scraps $95@97.50, sacked.

New York: Demand and supply fair; trend lower; 50% $80, 55% $87.50, bulk; 50% $83, 55% $90.50, sacked.

Ft. Worth: Demand fair; supply sufficient; meat and bone, 50% $96@98, f.o.b. or delivered Ft. Worth.

New Orleans: Demand good; supply ample; trend steady; $102.50@105.

Denver: Demand slow; trend slow; supply ample; 50% $95, bagged, truck lots; $92, bulk lots.

Portland: Demand fair; supply ample; trend unchanged; $2.15 a unit.

St. Louis: Demand slow; trend weaker; supply adequate; $95.

Ogden: Supply normal; $105 in 100-lb. bags.

Wichita: Demand moderate; supply sufficient; 50% $102.50, f.o.b. plant; 55%, no quotations, no offerings.

Louisville: Demand fair; trend steady; supply good; $105@115.

St. Paul: Light demand; improved supplies; weaker trend; 50% meal off $5 to $97@100.

Seattle: Demand good; trend steady; supply ample; $107.50, ex-warehouse, 50% protein.

MILLFEED

Minneapolis: Stepped up production combined with lack of demand to drop prices about $2.50 for sacked middlings and $1.50 for sacked bran; sacked middlings $40;

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sacked bran $40.50@41; red dog $44@46; bulk bran $33.50@35; bulk middlings $32.50@34.50.

Kansas City: Demand slow; trend weaker; supply ample with bulk feeds pressing; bran $37@37.50, shorts $38.25@38.75, sacked; bran $31.50@32, shorts $34.50@35, middlings $31.75@32.25, bulk.

Wichita: Demand fair; supply sufficient; basis Kansas City; bran $38.75@39.25, shorts $40.75@41.25; bran declined $1.50 and shorts $3.50, compared with the preceding week.

Ft. Worth: Demand fair; offerings light for immediate; carlots, burlaps, bran $47.50; gray shorts $49.50; bulk middlings $43.50; delivered Texas common points; unchanged on bran, $1.50 lower on shorts and $1 lower on middlings compared with previous week.

Chicago: Demand for millfeeds during the week ending May 6 has been at a very slow pace. Prices continued to be scaled down all along the line. Even red dog, which had been resisting the sell-off in the other types of millfeed, showed the impact of the lessened demand and the necessity for taking care of the day-by-day production in order to prevent track accumulations. Very little demand beyond next week. Quotations: bran, sacked $44, bulk $37.50; standard midds, sacked $44.50@45, bulk $38.50; red dog, sacked $48.50, bulk $44.50.

Omaha: Demand fair; trend weak; supply adequate; sacked bran $38.50; sacked gray shorts $40.50; bulk standard midds. $34.50, all Omaha basis.

Cincinnati: Demand fair; trend lower; supply adequate; bran and middlings $53.50.

St. Louis: Demand slow; trend lower; supply ample; bran $42.50@43, shorts $43.75@44.25, sacked; bran $36.50@37, shorts $39.50@40, middlings $37@37.50, bulk.

Memphis: Demand poor; trend lower; supply ample; wheat bran $45.80 sacked; gray shorts $47.80 sacked; standard midds. $40.70 bulk.

Boston: Demand very cautious; supply plentiful; bran $56, middlings $56.50@57.

Buffalo: Millfeed prices worked lower last week despite lower flour mill running time. There still is some resistance to prices and buyers are filling only spot needs. Sacked items were tight because of pretty good New York State country trade but bulk was easier on lagging mixer demand. Bran is going dry in the New England area but it hasn't hit New York State as yet. Red dog slumped on exceptionally poor demand from pig-growing areas and both bulk and sacked were biddable. The sacked differential on bran and middlings widened out from $6 to $6.50. Bran and middlings firmed up on May 6 and sacked bran ended up 50¢ and bulk was unchanged; sacked middlings were off 50¢ to $1 and bulk was down $1 to $1.50. Sacked red dog was down $7 to $8 and bulk was off $7. Quotations May 6: bulk bran $41@42.50, sacked $47.50@49; bulk middlings $41.50@43, sacked $48@49.50; bulk red dog $46@48.50, sacked $51@52.

Philadelphia: Demand and supply fair; trend unsettled; bran $57, standard midds. $57, red dog $63.

New York: Demand fair; trend lower; supply good; bran $53@54, standard midds. $53@54.

New Orleans: Demand fair; trend steady; supply ample; sacked bran $54@54.50, shorts $59@59.50; bulk bran $50.50@51.25, shorts $54@54.75.

Louisville: Demand slow; trend weak; supply good; bran $50, mixed feed $51.10, shorts $52.30, middlings $52.30, all prices off about $2.50.

Denver: Demand sluggish; trend weaker; supply ample; shorts $44.25, bran $42.25, mill run $43.25.

Seattle: Demand fair; trend steady; supply limited; $46, common transit points, carlots.

Portland: Demand good; supply limited; trend unchanged; $43.

Ogden: Supply average; to Utah and Idaho: red bran and mill run $43, middlings $48; to Denver: red bran and mill run $50, middlings $55; to California: red bran and mill run $50.50, middlings $55.50, f.o.b. San Francisco and Los Angeles.

Los Angeles: Standaard mill run $46.50@47.50 bulk, demand fair, easier trend, supply increasing; red bran $52@53 bulk, demand slow, weaker trend, ample supplies.

San Francisco: Demand good; supply tight; millfeed $49.50; red bran $54.50.

MINERAL FEED

Sioux City: 50-lb. mineral blocks 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.

Denver: Demand fair; trend steady; supply ample; $155.

Portland: Demand slow; supply ample; trend unchanged; $42.

Ogden: Supply normal; $113 in 50-lb. blocks; $103, granular, 50-lb. bags.

San Francisco: Demand steady; supply good; all-purpose with iodine $70.

Ft. Worth: Demand fair; supply sufficient; all-purpose granules $90, block $97; mineral phosphorus 6% granules $106, block $110; cattle-sheep mineral 7% phosphorus granules $100, block $107; hog mineral phosphorus 3½% granules $87, phosphorus 2% $77 (all in 50-lb. paper bags).

Wichita: Demand moderate; supply sufficient; all-purpose with iodine, 50-lb. blocks $97.50, 100-lb. bags $92.50, f.o.b. plant.

Seattle: Demand fair; trend steady; supply good; mixer mineral $48, ex-warehouse.

MOLASSES

Minneapolis: Ample supplies; demand fairly good for nearby; steady trend; 12½¢ gal., New Orleans; $33.50 ton, tank trucks, delivered Minneapolis.

Los Angeles: Demand good; trend easier; supply adequate; $21.50, bulk, f.o.b. tank cars; $21.75, bulk, f.o.b. tank trucks.

Buffalo: Demand good; trend and supply steady; 16½¢ gal., f.o.b. Albany.

Kansas City: Demand light; trend steady; supply adequate; 12¢ gal., tank car, New Orleans.

New York: Demand fair; trend steady; supply good; blackstrap 16¢ gal., tank cars, tank wagons, f.o.b. New York.

New Orleans: Demand good; supply adequate; trend steady; 12½¢ gal., tank cars and trucks; 600-lb. customers' drums $8.33.

Atlanta: Demand practically nil; trend steady; supply good; citrus $18@22.50, bulk, f.o.b. Florida producing plants.

Seattle: Demand fair; trend easy; supply good; $22, f.o.b. Seattle, tank car lots or truck lots.

NIACIN

New York: Trend steady; $8 kilo, 10-kilo lots; $8.20 kilo, 5- and 2½-kilo lots; $8.30 kilo, 1-kilo lots; freight prepaid or paid to destination.

OAT PRODUCTS

Chicago: Demand good; supply tight; reground oat feed $17.50; fine ground feeding oatmeal $69@70; feeding rolled oats $78@80.

Cincinnati: Demand poor; trend steady; supply adequate; pulverized white oats $49@52; rolled oats $83.50.

Los Angeles: Demand fair; trend unchanged; supply adequate; pulverized oats, local production $62.

Memphis: Demand fair; trend firm; supply light; 3½% protein, reground oat feed $23.25.

Minneapolis: Strong cash market reported during the past week; ample supplies; feeding rolled oats $81; feeding oatmeal $70; pulverized $45; crimped $59; reground oat feed $16.

Louisville: Demand slow; trend fairly steady; supply normal; reground up $1.50; rolled oats off 50¢; other items steady; reground $23.80; rolled $83.80; feeding $78.30; pulverized $53.32; crimped $69.80.

Boston: Demand and supply steady; white pulverized $57; reground oat feed $21.50.

Portland: Demand slow; supply ample; trend unchanged; rolled $65; ground $62; cleaned $65.

Philadelphia: Demand slow; supply fair; pulverized white $54.50; Canadian oat feed $30.50, domestic $25.50.

Seattle: Demand and supply fair; trend firm; $53, bulk, truck lots.

OYSTER SHELL

Louisville: Demand good; trend steady; supply good; in 80-lb. paper $23.45; in 50 lb. $23.70; in 25 lb. $26.95.

Boston: Demand slow; supply steady; $26.02 in paper.

Los Angeles: Demand steady; trend unchanged; supply ample; $14.80.

San Francisco: Demand fair; supply ample; local $15, eastern $26.

Cincinnati: Demand fair; trend steady; supply adequate; $24.45.

New Orleans: Demand good; trend firm; supply ample; $25@25.50.

Portland: Demand good; supply ample; trend unchanged; western $34; eastern $38.50; granite grits $28; shell flour $24.

Seattle: Demand and trend steady; supply good; eastern $36, carlots.

PEANUT OIL MEAL

Milwaukee: Demand and supply fair; 26% $42.

Atlanta: Demand fair; trend weak; supply limited; 45% old process $57.50, f.o.b. Georgia and Alabama producing mills; solvent process $52, f.o.b.

PEAT MOSS

Chicago: Demand good; trend steady; supply short; $3.85@3.95, standard 7⅛ cu. ft. bale.

Boston: Demand and supply steady; $3.15 bale.

Portland: Demand good; supply ample; trend unchanged; $3 bale.

Los Angeles: Demand and trend steady; supply ample; Canadian 6.1 cu. ft. bales $3.75.

San Francisco: Demand and supply fair; $3.65 bale.

Philadelphia: Demand good; supply very scarce; $2.95 bale, f.o.b. pier, nominal.

Seattle: Demand and supply good; trend firm; $2.80, bale, truck lots.

POTASSIUM IODIDE, U.S.P.

Cincinnati: Demand good; trend steady; 90% KI in calcium stearate or carbonate mixtures, 250-lb. drums $1.35; 200 lb. in 100-lb. drums $1.35; 100-lb. drums $1.38; 25-lb. drums $1.41, f.o.b. Cincinnati.

Chittenango, N.Y.: Demand good; supply adequate; 90% KI stabilized with calcium stearate, 200 lb. in 100-lb. cartons $1.30; 100-lb. cartons $1.32, 25-lb. cartons $1.45; freight paid to destination.

POULTRY BY-PRODUCTS

Salisbury, Md.: Good demand; somewhat limited supply; steady trend; $102, bulk, f.o.b. producers' plants.

Ft. Worth: Demand good; supply limited; 55% protein $110, f.o.b. north Texas plants.

Boston: Demand good; supply tight; $98, f.o.b. shipping points.

Los Angeles: Demand good; trend steady; supply tight; $1.90 a unit of protein.

Atlanta: Demand fair; trend steady; supply good; $98, sacked, f.o.b. Georgia and Alabama producers' mills.

RIBOFLAVIN

Cincinnati: Trend steady; feed grade (in feed supplements) 4¢ gram in less than ton lots in 3.36 to 16 gm./lb. mixtures; 3¢ in ton lots or more; freight prepaid or paid to destination.

New York: Trend steady; feed grade (in feed supplements) 4½¢ gm. in 3.36 to 16 gm./lb. mixtures, freight prepaid or paid to destination.

RICE BY-PRODUCTS

Los Angeles: Demand slow; trend unchanged; supply limited; California production, high fat content $56.

San Francisco: Demand good; supply ample; bran $45, polished $49.

Ft. Worth: Demand fair; offerings light; carlots, rice bran $35@36, f.o.b. south Texas rice mills; hulls $2.50, f.o.b. mills.

Atlanta: Demand fair; trend weak; supply ample; bran $44@45.

SCREENINGS

Cincinnati: Demand fair; trend steady; supply adequate; ground grain screenings $45.

Buffalo: Demand fair; trend steady to lower; supply good; ground, sacked $32.50, New York, lake and rail; unground, bulk $28.50, New York.

Chicago: Demand very slow; supply ample; ground grain screenings $35, sacked; Canadian, bulk $23.50.

Minneapolis: Supply and demand about equal in Canadians; domestic screenings very quiet; lights $10@20; mediums $21@30; heavies $31@40; Canadian bulk, down $2 to $24; Canadian ground $33; flaxseed screenings $35; oil type flaxseed screenings $45; basis 15%.

Ft. Worth: Demand slow; supply sufficient; ground grain $28.

SOFT PHOSPHATE WITH COLLOIDAL CLAY

Atlanta: $20.40@20.67.
Buffalo: $25.31@25.45.
Chicago: $24.77@24.90.
Cincinnati: $23.47@23.60.
Des Moines: $25.23@25.35.
Kansas City: $24.88@25.
Memphis: $22.20@22.47.
Minneapolis: $25.92@26.06.
Philadelphia: $24.32@24.95.
St. Louis: $24.14@24.27.

SORGHUMS

Ft. Worth: Demand slow; offerings light; carlots, bulk, No. 2 yellow milo $2.43@2.45, delivered Texas common points.

Los Angeles: Demand and trend steady; supply adequate; milo $2.62½ cwt., bulk.

SOYBEAN OIL MEAL

Los Angeles: Demand slow; trend firm; supply ample; $76.40@76.90, bulk.

St. Louis: Demand slow; trend steady; supply ample; 44% $66.

Minneapolis: Ample supply; demand fair at best; price off slightly; 44% $49.50, bulk, Decatur, for Minnesota shipment; 50% $59, bulk, Decatur.

San Francisco: Demand good; supply ample; $79.90.

Cincinnati: Demand poor; trend steady to easy; supply adequate; $54.50, bulk, Decatur.

Omaha: Demand fair; trend easy; supply adequate; 41% solvent $62, bulk.

Ft. Worth: Demand poor; supply sufficient; carlots: southern origin, 44% immediate $68.10, June $69.60, July-September $70.60; 50%, May $76.60, June $77.60, July-September $78.60.

Kansas City: Demand fair; trend steady; supply adequate; 44% protein meal for Kansas City $52.50, bulk, Decatur; unrestricted $54.50@55.50.

New Orleans: Demand fair; trend steady; supply ample; $66.50@67.50.

Denver: Demand poor; trend steady; supply ample; $76.20.

Wichita: Demand good; supply adequate; 44% $68, 50% $76, f.o.b. Wichita.

Chicago: During the week ending May 6 the soybean oil meal market seems to have leveled off to a considerable degree. Demand has shown some pickup and although supplies appear to be quite ample, the call has been aggressive enough to prevent any further price declines. Quotations: 44% protein, unrestricted, bulk, Decatur basis $55@55.50, eastern restricted $52.50; 50% protein, unrestricted $61; eastern restricted $58.

Atlanta: Demand fair; trend steady; supply ample; 44% $68.50.

TANKAGE

New Orleans: Demand fair; trend steady; supply adequate; $110@114.50.

Chicago: Demand fair; trend lower; supply adequate; 60% protein, in 100-lb. bags $105.

Wichita: Demand moderate; supply sufficient; 60% $100, f.o.b. plant.

St. Paul: Light demand; improved supplies; weak trend; $98@102.

Kansas City: Demand slow; trend steady; supply adequate for demand but not pressing; 60% digester $92.50@95.

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GUEST SPEAKER—I. S. Riggs (left) chats with Ted Harstad, president of the Northwest Feed Manufacturers Assn., at a meeting of the group this week in Minneapolis. Mr. Riggs, vice president of the Quaker Oats Co., Chicago, and chairman of the board of the American Feed Manufacturers Assn., addressed the group on advance feed booking and feeding to specification.

NORTHWEST

(Continued from page 1)

in producing for a market, rather than simply to market. For example, I would junk the concept of raising hogs to get rid of corn. Instead, I would work to improve the quality of my pork. I would say, 'Let's take care of our farm eggs, move more of them through grocery stores where modern methods of moving mass quantities of universally accepted foods can be exploited'."

In connection with producing to specification, the speaker said neither the farmer, processor nor the consumer should be afraid of such terms as "vertical integration," and "contract farming."

"You can't produce agricultural commodities to specifications without some sort of coordinated production and marketing agreement, and such arrangements ought not to be regarded as cuss words. The question, it seems to me, is just what sort of arrangements can best do the job," he explained.

"I say, let's put an end to the sort of thinking which associates contract farming with slavery, dictatorship, restricted markets, thought control, and all sorts of unpleasant things. Let's recognize instead that there can be good contracts and bad contracts."

Mr. Riggs commented that there are many possible arrangements under which the farmer, the feed dealer, the feed manufacturer, the food processor and the retailer can work together. "It is possible, for example, that all the functions of production, processing and marketing might be performed by a feed dealer or manufacturer. On the other hand, either one of these might serve as only one of the links in performing those functions," he said, adding that in cooperative production and marketing, there is no reason why anyone needs to lose his prerogative in making decisions.

Mr. Riggs said he thought the consumption side of the picture can be favorably influenced for all meat, milk and eggs by producing better quality at lower cost, and in a more convenient package or form.

Speaking of the feed industry specifically, he said the business is extremely competitive, and likely to become more so. "This is a good thing, I think, because the very fact of competition forces the feed manufacturer to provide better products and services at reasonable and competitive costs. In meeting this challenge, feed manufacturers are quickly bringing to animal agriculture the latest nutritional knowledge through practical, up-to-date production formulas. The feed industry thrives on challenges, because it is made up of extremely energetic, capable, dedicated people serving agriculture," he said.

POULTRY STUDY

(Continued from page 1)

dicate there is a strong possibility that the turkey proposals will get attention of the House Agriculture Committee at this session, and on the basis of the heat raised by the recent poultry industry complaints, Congress may consider controlling poultry through marketing quotas through the bottleneck point of the turkey hatchery industry.

As the sub-committee on poultry industry problems concluded sessions this week in an executive meeting with top USDA officials, it was related to this reporter that the poultry group urged that USDA put marketing quotas on shell egg marketings as a means of halting price declines in the shell egg market.

House Agriculture Committee sources, ordinarily conservative in temperament, say now that the poultry industry hearing has alerted the committee to what they call the "core of the problem." A sub-committee member asserted that the broiler industry is suffering from the impact of feed industry financing and credit use which acts to cripple small producers. This challenge to the feed industry involves that against integration.

The committee member told this reporter that he is not opposed to removal of small poultry producers from operation if that results from bare economic factors, but he asserted that this may not be the case and that elimination of small poultrymen may be the result of the intervention of feed manufacturers and supermarket store price policy which "drives the relatively small operator to the wall."

This committee member told this reporter he is certain that feed manufacturers will be asked to appear to explain their position in the poultry industry problem.

It is interesting—and possibly significant—that at every session of the agriculture committee, Rep. Charles Brown (D., Mo.), who conducted poultry and feed industry hearings two years ago, appears as a guest to intervene and to explain his previous exploration of the poultry industry.

Despite the obvious political connotations of the House Agriculture Committee activities, plus the presence of Rep. Brown as a supporter of Sen. Stuart Symington of Missouri (suggested as a Democratic presidential nominee), it now becomes evident that the feed industry is being readied for some sort of going-over by the House Agriculture Committee some time later this year.

Some committee members who ordinarily might be expected to support free enterprise may now be found in the ranks of those who believe that the feed industry is making very generous profits, that there is no difference between one brand of feed and another, and that the feed industry should be selling by reducing prices rather than issuing "excessive credit." One congressman argues that the industry is buying business through credit excesses rather than merchandising feed on a price basis. Also, he contends that there is no difference in nutritional values among principal branded feeds.

At any rate, it now appears that the recent hearings here have touched off what can be a much deeper investigation of the poultry industries than had been expected. Also, the House committee may be persuaded to recommend controls over turkey hatchery production and ultimately over broilers, although the proposal to impose marketing quotas on eggs may not succeed.

MEAL MARKETS

(Continued from page 4)

of the 100,000 ton demand from Argentina.

The Italian procurement of 27,000 tons of edible oils from ICA authority will be lifted in two months, officials declare.

The uncertainty of the oil export outlook, however, is the timing of the lifting of the big procurement programs for the Argentine and Turkey. USDA officials believe that Turkey will lift three fourths of its 100,000 tons procurement program before the end of this crop year.

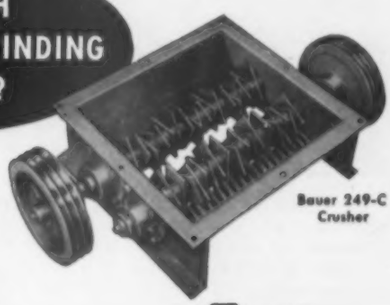
Government officials who, on learning this Foreign Agricultural Service opinion, say that the Argentine could lift about the same volume in the same period of time.

This information only adds up to a highly speculative position which is not of immediate concern.

The basic consideration is that the heavy prospective exports of edible fats from the U.S. this year will act as a stabilizing agent for soybean oil meal.

Export availability of soyoil will tend to provide oilseed crushers with a reasonable profit margin, and in view of the record-making chew-up of feed grains now indicated, there must be for the feed industry some profit comfort from here on into the end of this feed crop year.

FACED WITH CRUSHING OR GRINDING PROBLEMS?



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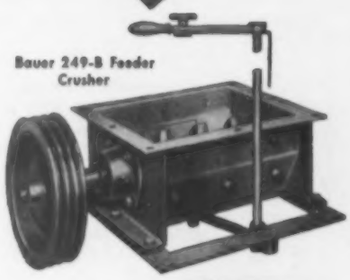

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TOP OF THE HOPPER

(Continued from page 2)

The release, which describes Rep. Brown as "an articulate spokesman for poultry farmers since coming to the Congress in 1957" quotes him further:

"All of us must work together to lift this industry out of the depths and put it back on level ground. These troubles have been accumulating since the early 1950's. But now, at last, the industry itself shows signs of wanting something done; and that's the first step."

There is a great stir among New York and New Jersey egg producers about current low prices. Last week 50 farmers from the Lower Hudson Valley handed out 12,000 eggs in front of the New York Mercantile Exchange. Their signs said, "It doesn't pay for our chickens to lay." A New York state official declared that competition from the South is at the heart of the problem. One news report declared that eggs moved from Tennessee to Iowa recently. Much of the ire of eastern producers has been directed at "speculators."

How much of current egg production is being done under contract arrangements? No accurate figures are available, but a poultry industry leader in one Midwestern state estimates that 90% of the production in his state is not under any type of contract plan nor being produced by larger, commercial flocks. He observed, however, that integrated types of programs would continue to expand.

It appears that a good many local feed mills in the Corn Belt, operating a grain bank system, are cranking out 75 to 100 tons of feed per day. The volume is particularly large in some of the hog areas where farmers are going increasingly to complete feeds hauled out in bulk. Also, more of the dealers are putting in pellet mills to pellet livestock rations.

Speaking of volume, the increased amount of grinding and mixing in recent years makes one wonder just what is the total amount of feed that goes out in complete mixed form to the nation's farmers and feeders. While volume of supplement made by larger manufacturers is reported, an increasing amount of supplement these days goes into local mills' complete mixes, which do not enter into reports of industry volume.

A way to control production of beef in order to minimize price fluctuations was suggested by a banker recently. Emmett Dignan, vice president of the Denver U.S. National Bank told Colorado cattlemen that they should take advantage of new techniques of feed additives and feeding programs and market smaller animals which have a minimum of tallow. "The day of the two-year-old steer is past," he said. "The man who feeds to 1,400 and 1,500 lb. is nothing but a gambler in the future."

Processing of feed closer to the feeder is bringing a number of new arrangements and programs for feed companies. One regional firm in the Midwest is currently beginning a program of helping to set up "satellite" mills. The plants, located in specialized livestock and poultry areas and handling everything in bulk, will be owned and operated by local, independent feedmen. Planning and other assistance will be provided by the manufacturer, which will enable the dealer to operate on a larger and more specialized basis. They will make complete feeds produced from local grains and concentrates supplied by the manufacturer. This program appears to fall about halfway between the building by a manufacturer of smaller, local mills, and the supplying of concentrates to retailers for just custom mix operations.

Chicks Placed in Principal Broiler Areas

(000's omitted)

Week ending	Maine	Conn.	Penn.	Ind.	Ill.	Mo.	Del.	Md.
February 28	1,154	601	843	816	176	829	1,927	1,814
March 7	1,196	524	835	765	197	849	1,962	1,941
March 14	1,221	596	962	783	197	821	1,851	2,046
March 21	1,243	519	787	873	154	883	2,051	1,886
March 28	1,231	496	690	961	183	845	1,931	2,084
April 4	1,229	597	985	877	198	885	1,914	2,021
April 11	1,187	578	866	911	182	882	1,833	1,904
April 18	1,215	598	927	871	218	748	1,985	1,729
April 25	1,350	602	735	930	173	711	1,720	1,914
May 2	1,234	666	819	843	191	843	1,986	1,711

Week ending	Va.	W. Va.	N.C.	S.C.	Ga.	Fla.	Ala.	Miss.
February 28	1,269	700	3,214	360	6,626	246	3,228	2,308
March 7	1,295	680	3,143	357	6,888	263	3,278	2,469
March 14	1,326	625	3,164	437	7,094	232	3,708	2,408
March 21	1,219	731	3,384	377	7,305	239	3,514	2,593
March 28	1,273	678	3,376	379	7,440	216	3,661	2,609
April 4	1,356	637	3,307	413	7,173	264	3,712	2,540
April 11	1,247	676	3,332	375	7,382	214	3,640	2,657
April 18	1,072	681	3,287	390	7,477	220	3,600	2,633
April 25	1,025	694	3,313	338	7,319	193	3,767	2,690
May 2	1,220	601	3,213	326	7,244	222	3,802	2,531

Week ending	Ark.	La.	Texas	Wash.	Oregon	Calif.	Total 22 areas 1959	Total 22 areas 1958
February 28	3,392	509	2,267	343	283	1,164	34,069	30,808
March 7	3,580	450	2,471	345	267	1,176	34,722	30,406
March 14	3,713	575	2,419	363	301	1,068	35,944	29,863
March 21	3,822	494	2,271	356	257	1,165	36,123	29,291
March 28	3,761	505	2,475	350	246	1,213	36,603	30,134
April 4	3,745	559	2,558	232	268	1,207	36,677	31,793
April 11	3,618	488	2,473	329	280	1,245	36,298	33,156
April 18	3,625	500	2,600	326	279	1,173	36,154	33,291
April 25	3,567	468	2,627	418	250	1,188	35,992	33,667
May 2	3,465	550	2,455	375	258	1,054	35,609	33,930

Personnel Promotions Announced by Purina

ST. LOUIS — Several promotions for personnel of Ralston Purina Co. branch plants have been announced by David L. Grant, manufacturing vice president of the firm. Included are the following:

J. J. Helms, office manager and buyer at Richmond, Ind., to manager of the company's new plant at Fond du Lac, Wis., effective July 1.

R. W. Yaw, general foreman at Minneapolis, to superintendent at Fond du Lac, effective June 1.

J. H. Renth, credit manager at Iowa Falls, Iowa, to manager of the new plant at Ottumwa, Iowa, effective July 1.

T. G. Henkle, general foreman at Circleville, Ohio, to superintendent at Ottumwa, effective June 1.

C. C. Huber, superintendent at Omaha, Neb., to superintendent at Bloomington, Ill.

J. L. Clark, superintendent at Bloomington, Ill., to plant engineer at Bloomington.

B. C. Bowman, general foreman at St. Louis, to Omaha as superintendent.

G. R. Wolfe, manager at Tampa, Fla., to Harrisburg, Pa., as plant manager, replacing W. C. Wells, who has resigned.

J. E. Jewett, assistant manager at Minneapolis, to Tampa as plant manager.

Missouri Feed Control Funds Said Inadequate

KANSAS CITY—Funds allotted to the feed and seed control department in Missouri are "wholly inadequate to maintain the present level of work expected from this department," it is stated in a recent bulletin from the Midwest Feed Manufacturers Assn.

According to the bulletin the Missouri Senate Appropriations Committee has alloted $223,900 to the department for the next biennium. "This is approximately $106,000 less than the estimated collections for the same period and considerably less than is required to effectively run this department," the bulletin explains.

Fire Destroys Plant

COUNCIL BLUFFS, IOWA—The 33-year-old plant and elevator of Raven Feeds, Inc., was destroyed recently by fire, resulting in an estimated loss of $150,000, including a $35,000 inventory of sacked feed and other grains.

NEW FEED STORE

UMATILLA, ORE.—The Umatilla Feed & Seed Store opened here recently under the ownership of A. W. Easton. The new outlet will handle a complete line of feeds and farm supplies.

Broiler Egg Set Shows Decrease

SALISBURY, MD.—Broiler prices showed a slight improvement last week in Delmarva. The average price paid on the farm was 17.78¢ compared to 17.53¢ the week before.

However, there is not the demand for broilers this year that there was last year. Delmarva growers sent 3,783,000 broilers to market last week. This was 11% less than the previous week and 3% less than the same week a year ago. Last year for the same week the price was 21.02¢.

Nationwide, hatcherymen in 22 reporting states set 47,124 000 eggs during the week ending May 2. This was 1% less than the previous week and 6% less than the corresponding week a year ago. Decreases in the number of eggs set from the previous week were reported in 12 of the 22 states. Sharpest decreases from the previous week occurred in California, Arkansas, Alabama and Virginia.

Broiler growers in the 22 states placed 35,609,000 chicks. This was 1% less than the previous week but 5% above the corresponding week a year ago. Decreases were reported for 12 states—increases in 10 states, compared with the previous week. Largest decreases from the previous week occurred in Maryland, Texas, Mississippi and California.

Broiler growers in Delmarva during April received 15% less for their broilers than for the same month a year ago. Feed prices were down 2% from the year earlier, and broiler chicks were down 36% in price.

Oilseed Meal Futures Continue Lower Trend

MEMPHIS—Oilseed meal futures generally were down on the Memphis Board of Trade the past week, compared with the week before.

Slow cash oilseed meal demand was a big factor in the decline, which in most cases was fractional. Only one gain was made in bulk solvent cottonseed oil meal.

Substantial deliveries in May soybean oil meal helped drop that market.

During the period, said one pit observer, the market was in a temporary oversold condition and a rally was viewed as an adjustment of technical proportions.

Unrestricted soybean oil meal closed May 6 25¢ to 95¢ ton lower than on April 29. Eastern Trunk Line soybean oil meal was 50¢ to $1.50 lower, bulk solvent cottonseed oil meal 75¢ lower to 50¢ higher, and sacked old process cottonseed oil meal unchanged.

K. C. Feed Club's Golf Outing May 19

KANSAS CITY—The annual spring golf outing of the Kansas City Feed Club will be May 19 at the Oakwood Country Club.

Golfers can tee off any time after 1 p.m. Wayne Anderson, Norris Grain Co., club president, advised golfers to make up their own groups or come by themselves and get up a game with other outing participants.

The cocktail hour will start at 6 p.m., followed by dinner at 7 p.m. Prizes valued at more than $100 will be given during the evening.

First Toll Crush Flaxseed Available

MINNEAPOLIS — The first flaxseed available under the toll crushing program announced recently by the U.S. Department of Agriculture was reported this week by the Minneapolis commodity office of the Commodity Stabilization Service.

Approximately 200,000 bu. are located at Duluth-Superior and 500,000 bu. in Minneapolis. Bids are to be received by the Minneapolis office not later than 1:30 p.m. Central Standard Time, May 11.

The toll crushing program involves the sale of flaxseed by Commodity Credit Corp. to processors and the concurrent purchase of the resulting quantity of linseed oil.

RAIL RATES

(Continued from page 7)

connection that the railroads cannot make a general downward revision in grain freight rates on all of their traffic due to only a limited portion moving by truck.

No Prediction

Mr. Hibbard was quoted as saying that neither he nor the committee is in a spot to say what the percentage of reduction would be nor what the readjustment in cents per hundredweight would amount to. He followed this observation with a hope that the grain trade would be in a position to make such recommendations at the May 12 meeting as to both figures for submittal to the Western Trunk Line carriers as a whole for their consideration.

MARKETS

(Continued from page 2)

smaller combination hatchery and feed mills who raise their own broilers and sell direct to the processing plants are not hurting as bad as others.

The wholesale egg market this week is still practically unchanged between 24¢ and 25¢ doz. Due to the present prices, it is reported that some are selling their laying hens to stop any more losses.

Due to good supplies and poor demand, the price of corn dropped 1¢ bu. this week to $1.45 delivered most Georgia points. Feed ingredient buyers continue to only buy their major proteins on a hand-to-mouth basis, with prices remaining practically unchanged.

Dairy and cattle feed business continues on the slow side, and the beef cattle raisers in the Southeast do not plan to start any extensive feeding operations before late July or early August. The prices the concentrators are paying for fruit are so high that many of the canners are unable to pack single-strength juice, which is reducing the availability of peel for citrus pulp. Many processors report that they are over-sold for the season and are not offering any additional pulp for sale.

Central States

The picture in the feed trade has been "somewhat of a mixed one." Some manufacturers have been reporting a strictly "status quo" situation with everything moving in a rather seasonal way and nothing of any outstanding importance in the news, while, on the other hand, others in the trade say that business during the week ending May 6 had been stepped up all along the line.

Demand for cattle and hog feeds continues apace in most areas, while call for poultry feed has been holding up well and, in some cases, has shown a broadening in the demand.

Running time remains satisfactory generally and holding up well toward capacity.

South Central

"We are not unhappy with the amount of business we are doing, but we wish it would level out so we could operate our plant more efficiently," says one feed manufacturer. "Part of the week we have to run overtime to keep up with the rush of orders, and the balance of the time we have to shut down early because nothing comes in." The same problem is affecting most of the other mills in the area, but it is believed that it will straighten out quickly after the farmers get caught up with their first rush of field work.

Hog feeds are carrying the biggest share of the load in keeping the mills going. Pig starter and pig grower sales are unusually brisk, and the gain on these items is offsetting the drop in the dairy and cattle feed lines. Poultry feeds are in a slow decline, layer feed sales are being hurt by the disappointing egg prices and chick starter demand has not shown anything like its normal vigor.

Ohio Valley

Midsummer weather prevailed in the Ohio Valley during the past week. As a result, lush pasturage became available for the first time in more than six months, and there was a general exodus of farm animals to the fields.

As expected, sales of formula feeds declined somewhat under normal tonnages, although demands for chick starters and hog feeds were reported holding up quite well, and are expected to improve somewhat in the weeks ahead.

Because of the continuing glut in area markets for broilers and eggs, with supplies more than adequate for normal demands, prices again slumped off another ½@1¢ at area wholesale markets.

As a result, feed manufacturers who have been financing chick raising by farmers, are now reported to be withholding their support to reduce the current oversupply of poultry.

Mountain States

Feed mill representatives reported this week that their sales volume has increased over a week ago and is up substantially from a year ago at this time.

Getting heavy demand of late are turkey feeds. A large increase in the number of turkeys raised is reported in the area and the demand is growing with the size of the birds.

Pacific Northwest

Although lower prices were quoted for soybean meal and dehydrated alfalfa meal during last week's moderately active Pacific Northwest feedstuffs market, trading quotations averaged firm to higher because of increases posted by most feed grains, wheat millfeed and fish meal.

Trade sources indicated that demand from mixers and feeders was generally on a hand-to-mouth basis with purchases mainly for fill-in needs. Buyers had protected most of May's anticipated requirements.

Mixers also reported that available offerings of many items were relatively small and some were even short of the full demand.

Soybean meal and alfalfa meal listings were cut as much as $2 ton while quotes for blackstrap molasses closed 50¢ ton lower. Offsetting these losses were $1 higher values for wheat millfeeds along with a 5¢ advance per unit for fish meal and 50¢ to $1 higher feed barley prices. Corn values gained $1 or more from the previous week's close.

Pacific alfalfa hay trading last week was marked by a further slackening of demand and limited offerings of quality bales. Trade sources explain the small remaining stocks of old crop hay are in firm hands.

A high rate of feeding was maintained throughout the week by Oregon and Washington poultrymen.

Pressure from lower California prices caused most Portland area processors to lower prices for breeder turkeys 1¢. Grade A hens at 23¢ are now priced 6¢ lower than one year ago, while the tom price, also at 23¢, is only 2¢ below that of the same 1958 period.

Prices for eggs at Portland declined 1 to 2¢ during the week with AA larger eggs bringing 28 to 30½¢ doz., f.o.b. processing plants, and AA mediums at 23-25½¢ and AA smalls at 20-23½¢.

Choice fed steers sold steady to 25¢ lower at the North Portland livestock market within a $29-30 range.

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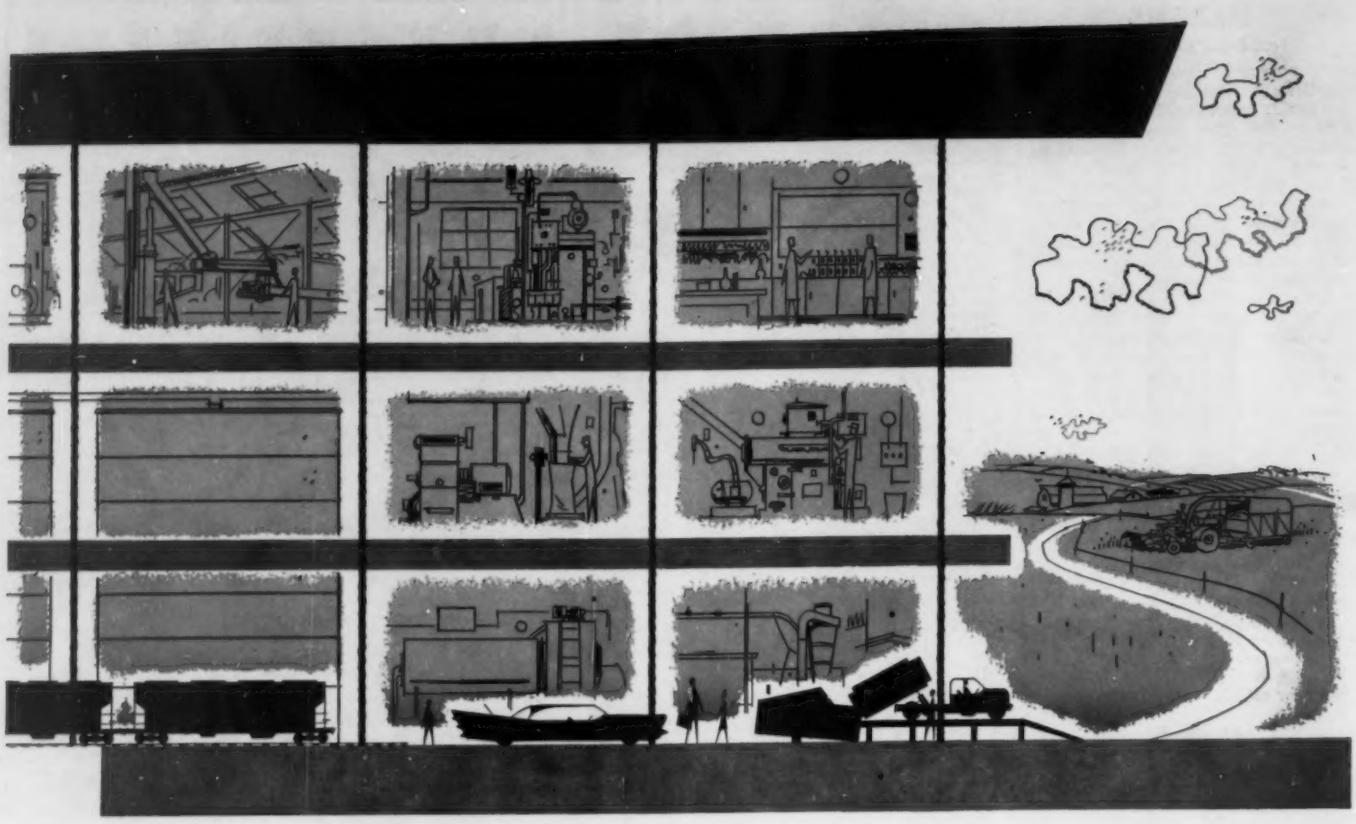

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